Peas- Mukled varity
Beans
Burpee Douglas Greenpod
Repugn

Organic Gardening

GARDENING WITHOUT THE USE OF CHEMICALS

MAY, 1947

25 Cents

UNIVERSITY OF MICHIGAN LIBRARIES

Organic Gardening Publications

• Choose from this wide variety of garden literature—planned to appeal to the home gardener, farmer, orchardist and plant lover.

Annuals and Perennials by Cecile Hulse Matschat. Describes the advantages of annuals over perennials, and vice versa . . . . where and what to plant . . . . morning and evening gardens . . . . rock gardens . . . . roof gardens . . . window gardens . . . . cultivation and planting. From a Houghton Mifflin Co. book. 50c

House Plants—How to Grow Them by P. T. Barnes. A complete guide for the beginner and "green-thumbed" old timer . . . . with minute directions for helping both successfully cultivate healthy, vigorous-growing plants in the house. From a Doubleday and Co. book. 50c

House and Greenhouse Gardening by Fred McCready. Deals with simple and inexpensive means for growing flowers, vegetables and vines year 'round in your house and under glass in hot-beds and greenhouses. Demonstrates the possibilities of constructing or buying a greenhouse for your own use. 50c

Gardening with the Experts by Noted Horticultural Experts. An encyclopedia on all phases of gardening, with enjoyable and instructive reading for every gardener, no matter how varied or specialized his interests may be. Each chapter alone is worth the price of the book. Illustrated. Reprinted from a Macmillan Co. book. 50c

Ten Trustworthy Tropical Trees by John G. Gifford, Prof. of Tropical Forestry and Conservation, Univ. of Miami. A delightfully readable and chatty book that contains practical plans for planting, propagating, cultivating and harvesting the fruit, blooms and timber—with detailed descriptions of each species, its history and growing habits. Includes the lime, coconut, guava, avocado and mango. 50c

Wild Gardens of New England by the famous author, Walter Prichard Eaton. Fascinating descriptions of what the natural setting and environment is like of hundreds of lovely, wild flowers—what steps you can take to transfer, replant and domesticate them—how to reproduce the enchantment of their colorful natural setting in your garden. Originally published by W. A. Wilde Co. 50c

Gardening for Profit by Peter Henderson. Though originally published in 1874, this classic guide, by the famous founder of the famous seed concern, reveals many profitable secrets and practical methods that even present-day gardeners will find interesting and useful. 50c

Quick-Return Method of Compost-Making by Maye E. Bruce. Backed by experimental evidence, the author reveals her provocative, new idea for producing compost WITH OR WITHOUT animal manure through the use of activator agents that quickly disintegrate and enrich the heap. New methods, new preparations with detail explanations for following her system. 50c

Tree Crops by J. Russell Smith. An inspiring book on the majesty of crop-yielding trees—their natural adaptation to hilly, steep lands—their crops as animal food. Condensed from a Harcourt, Brace & Company book. 50c

Complete Modern Garden Herbal by Robert O. Barlow. The Gardener, Herb Doctor, Cook, and Plant Lover will enjoy this new Herbal. Many facts about Mr. Barlow's long personal experience with herb gardening and usage in several lands; not found in other books. Richly illustrated. 50c

The War In the Soil by Sir Albert Howard, C.I.E., M.A. A magnificent summary of the organic cause—a standard text for farmers and gardeners who desire to change from ordinary chemicals to home-made organic fertilizer. 50c

Gardens Beyond the Rainbow by Roger W. Smith. An instructive book by a widely-traveled author on gardens in various parts of the world. . 50c

Leaves and What They Do by Heinrich Meyer. An illustrated encyclopedia dealing with all aspects of the leaf and its importance to the gardener and lover of plants. 25c

The Fruit Orchard edited by J. I. Rodale. Abounding with practical hints, unusual data on fruit growing—rare information on tree growth. . . 25c

Edible Plants of the Pond and Water Garden by G.L. Wittrock (N. Y. Botanical Garden). What did the Indians do with various water plants? What is their food and medicinal value? A wonderful instructor for the nature lover and gardener. . 50c

Compost—How To Make It edited by J. I. Rodale. The only book of its kind ever published. Describes every angle of compost making. Secrets and short-cuts that amaze old-time gardeners. . . 25c

Animals and the Gardener by Richard Headstrom. A concise, illustrated work about animals and insects that are friends and foes to the garden. 25c

Sunflower Seed—The Miracle Food by J. I. Rodale. An amazing treatise on how to grow, how to eat this vitamin-rich food—explains benefits to eyes, teeth, skin and general health. 25c

Luther Burbank by Roger W. Smith. Interesting reading about plant breeding and the important contributions of this great horticultural pioneer. 25c

Root Development of Vegetable Crops. Contains suggestions about root habits that you need to know if you want your vegetable gardening to be more profitable and successful. It will entirely change your concept of what is below ground. Non-technical with remarkable illustrations. Condensed from a McGraw-Hill book. 50c

Our Friend, the Earthworm by George S. Oliver. Deals with this creature's importance to greater plant and vegetable growth—its beneficial effects to man's health. $1.00

Questions and Answers on Compost edited by J. I. Rodale and Heinrich Meyer. An indispensable guide for compost making—compiled from correspondence with thousands of gardeners. 25c

Seedlings by Evelyn Speiden. An illustrated book devoted exclusively to the problem—how to start seedlings—how to prepare the garden. . 50c

Weeds and What They Tell by Ehrenfreid Pfeiffer. Invaluable illustrated guide for the gardener and buyer of land—discusses hundreds of weeds common to farm, orchard and garden. . . . 50c

Vest Pocket Vegetable Guide by Roger W. Smith. How to grow 40 vegetables in the organic manner—for medium northern climate. . . . 25c

The Formation of Vegetable Mold Through the Action of Worms by Charles Darwin. Contains the most important parts of his classic on the earthworm. 25c

Debates in the House of Lords deals with the advisability of forming a Royal Commission to check on the Sir Albert Howard method of farming and gardening. 25c

Natural Bread edited by J. I. Rodale. Discusses health-giving values of breads and cereals made with organically-produced, stone-ground grains. . 25c

Sleep and Rheumatism by J. I. Rodale. Explains simple rules for avoiding stubborn conditions of neuritis caused by pressures exerted during sleep. 25c

In Canada and Foreign

$1.00 books cost $1.10, 50c books cost 55c and 25c books cost 30c.

•

Send Order Direct To

ORGANIC GARDENING

EMMAUS . . . . . PA.

ons

er W. Smith,
aveled author
orld. . 50c

n Meyer. An
n all aspects
gardener and
. . . 25c

e. Abounding
n fruit grow-
th. . . 25c

Garden by C.L.
What did the
nts? What is
wonderful in-
dener. . 50c

J. I. Rodale.
shed. Describes
rets and short-
. . . 25c

rd Headstrom.
nimals and in-
he garden. 25c

y J. I. Rodale.
w, how to ea
enefits to eyes
. . . 25c

nteresting read
important con-
l pioneer. 25c

. Contains sug-
need to know
ing to be more
entirely change
und. Non-tech-
ns. Condensed
. . . .50c

S. Oliver. Deal
o greater plan
icial effects t
. . . $1.00

edited by J. I.
dispensable guide
rom correspond
. . . 25c

strated book de-
—how to start
arden. . 50c

renfreid Pfeiffer.
he gardener and
of weeds con-
. . . 50c

Roger W. Smith
e organic manner
. . . 25c

rough the Active
ontains the most
the earthworm.
. . . 25c

als with the ad-
mmission to check
d of farming and
. . . 25c

Discusses health-
ereals made with
d grains. . 25c

ale. Explains sim-
conditions of res-
during sleep. 25c

oreign
ooks cost 5½ a

To
ENING
. . . PA.

Special Collection Offer of

Schling's Famous Vegetables

Including the Popular Midgets

STRAWBERRY CORN

Tiny ears 2 in. long of shiny mahogany color. Kernels pop to huge delicious white puffs. Ears in their straw-colored husks are unique and attractive for decoration. Pkt. 50c.

BRONZE BEAUTY LETTUCE

This brand-new hot weather lettuce is of the Oak Leaf type and has all the attributes of that very popular variety but is even more tender and of better flavor. It is the ideal hot weather lettuce for all climates. Awarded the All-American Bronze Medal of 1947. Pkt. 35c.

TINY TIM TOMATO

Bears a great profusion of red juicy miniature tomatoes of delicious flavor. Excellent for garnishes and conserves. Pkt. 35c.

MASON'S GOLDEN MIDGET CORN

The sweetest sweet corn. Height 3 ft. Ears 4½ in. long. 3 to 5 ears per plant. Matures in 56 days. Luscious, tender, golden yellow kernels. Pkt. $1.00.

BIBB LETTUCE

Regarded by many as the finest-flavored lettuce of all. Crisp, tender, dark-green leaves teeming with vitamins. Best for Spring and Fall crops and for cold-frame culture. Pkt. 35c.

SCHLING'S MIDGET WATERMELON

A delicious small melon averaging 3 lbs. Ideal for northern gardens because of its extreme earliness. Very prolific. Pkt. 35c.

PURPLE CROSS BANTAM CORN

Has the delicious flavor of Golden Bantam. Its kernels are bright golden yellow. Its foliage, stem, husk, and tassel are rich purple, remarkable resistance to borer and ear worm, particularly in the South. Packet 50c.

SPECIAL COLLECTION OFFER:—1 pkt. each of all seven outstanding vegetables above (value $3.40) for only $2.50; 2 pkts. each for only $4.75.

POT-GROWN STRAWBERRY PLANTS

For delivery immediately (up to May 1st) or during July and August. (Please specify which delivery date). We offer strong-rooted, pot-grown plants in a collection of four choice varieties:

Blakemore: extra early **Senator Dunlap:** mid-season **Ambrosia:** late

Your choice of **Mastodon, Gem,** or **Streamliner:** ever bearing.

12 plants of each (48 in all) .....$ 6.50
25 plants of each (100 in all) $11.00
50 plants of each (200 in all) $19.50

These are guaranteed to be highest-grade plants. All orders sent express collect. Order at once.

SCHLING'S BEAUTIFUL SPRING CATALOG FREE

Write at once for your copy of this full-color garden book presenting the best new introductions offered in years and all the choicest of the old favorite flowers and vegetables.

MAX SCHLING SEEDSMEN, Inc.

Dept. O., 618 Madison Ave., New York 22, N. Y.

THE ONLY MAGAZINE DEVOTED EXCLUSIVELY TO ORGANIC GARDENING

Organic Gardening

Contents

MAY 1947

VOLUME 10
NUMBER 6

The Forum 4

With the Editor—Town Garbage Disposal ..... J. I. Rodale 14

The Work of the Soil Population ..... Sir Albert Howard 16

Results 18

More About Boxwood ..... J. Horace McFarland 21

Mineral Relationships Between Soil and Plants ..... E. E. Pfeiffer 27

Acid-Loving and Lime-Loving Plants ..... H. K. Meyer 30

Over the Fence ..... H. K. Meyer 34

The Beauty of Vegetable Flowers ..... H. K. Meyer 37

New Books ..... H. K. Meyer 40

Wild Flowers at Home ..... Woodruff O. Hopkins 41

Dried Sewage Sludge In the Compost Heap ..... Paul A. Uhlmann 45

Garden Calendar—May 48

Eat The Best When It Is At Its Best ..... B. F. Lutman 49

Club News 53

Reader's Correspondence 54

• Editor and Publisher
J. I. RODALE

Associate Editor
SIR ALBERT HOWARD, C.I.E., M.A.

Assistant Editor
HEINRICH MEYER, Ph.D.

Art Director
LLOYD PFLEIGER

PUBLISHED MONTHLY BY ORGANIC GARDENING. PUBLICATION, EXECUTIVE, EDITORIAL, SUBSCRIPTION AND ADVERTISING OFFICES; 6TH AND MINOR STREETS, EMMAUS, PA. SUBSCRIPTION RATES, UNITED STATES AND POSSESSIONS, ONE YEAR $3.00, TWO YEARS $5.00, THREE YEARS $7.00. UNLESS OTHERWISE DIRECTED ALL SUBSCRIPTIONS BEGIN WITH THE CURRENT ISSUE. RENEWAL SUBSCRIPTIONS BEGIN IMMEDIATELY AFTER OLD SUBSCRIPTION EXPIRES. WHEN CHANGING AN ADDRESS, GIVE THE OLD ADDRESS AS WELL AS THE NEW. MANUSCRIPTS SHOULD BE ACCOMPANIED BY FULL RETURN POSTAGE AND A SELF-ADDRESSED ENVELOPE. PRINTED IN UNITED STATES OF AMERICA. COPYRIGHT 1947 BY ORGANIC GARDENING. ENTERED AS SECOND CLASS MATTER AT THE POST OFFICE, EMMAUS, PA; UNDER ACT OF MARCH 3, 1879.

BETTER COMPOST BETTER SOIL

Prettier Flowers; Superior Vegetables and Fruits

Never Before A Product Like This!

- **Makes activated soil builder in 2 to 5 weeks!**
- **Encourages valuable earthworms.**
- **Converts garbage into humus without odor!**
- **Activates and conditions soils! Aids mushroom growing.**
- **Energizes hot beds; even makes hot beds without manure!**
- **Converts waste into wealth at lowest cost—Nature's own organic, bacterial way!**

Every gardener wants pretty flowers, lush lawns, more healthful vegetables and fruit. Wise organic gardeners know that the best and easiest and cheapest way to better gardens is thru compost-fed soil . . . that garbage makes richest humus . . . that leaves alone are superior in fertilizer values to manure!

But formerly it often required months or years to build rich soil. *Now*, with *ActivO*, you can convert choice compost into fertilizer in as short a time as 2 weeks! And WITHOUT ODOR!

Don't burn leaves or throw away a cob or cornstalk or chicken bone! Use even sawdust and soot. Compost all such vegetable and animal waste with **ActivO**, the odorless, organic way. So easy, quick and low-cost! **No manure needed . . .** But composting is just one valuable use for ActivO:—

SOIL ACTIVATION: Use it to activate, condition and sweeten soils directly. Peps up sluggish soils. Try it!

HOT BEDS: Improves heating and nutrient release. Actually makes hot beds without manure!

HELPS OTHER AMAZING WAYS: ActivO reduces odor in outdoor toilets; converts the waste into an odorless, easily handled, ash-like soil builder . . . **Mushroom growers** use it to aid nutrient release . . . It solves disposal problems for **canners; seedsmen; rabbit, poultry and dog raisers**—and for **CITIES** and **INSTITUTIONS**, saving taxpayers' money.

All this with organics! ActivO works exactly like Nature in turning organic matter into humus, but **many times faster** —the result of an unusual discovery in selecting strains of energetic organisms—scientifically propagated into billions, and packaged in moist soil-conditioner—ready to go to work for you any month of the year. . . . ActivO isn't an "herb" concoction; doesn't destroy earthworms or upset soil bacterial balance.

GARDENERS PRAISE IT! Tell how vegetables look and taste better . . . how beautiful flowers grow where nothing would grow before . . . A Missouri gardener writes, "Soil is 'cinders'. Had very dry summer, with hot winds in July. But had used ActivO compost . . . all crops look good; and dug 1½ bushels best potatoes in neighborhood from space only 15 x 12."

Another enthusiastically tells, almost unbelievingly, how he composts large quantities of manure, in a city backyard, without odor! Still another makes fertilizer in his basement, from **garbage.**

You will want to try this unusual product. Get some ActivO today. **TRY YOUR LOCAL OR CATALOG DEALER FIRST.** If your regular dealer doesn't have it, use coupon below. **Don't accept substitutes!** There's only ONE **ActivO**—only one organic, bacterial product like this. Insist on "Act-tive-Oh!"

SPECIAL

If already an ActivO user and your local dealer hasn't the additional ActivO you need, take advantage of this offer:

One No. 25 size drum ActivO, for 3 tons compost, and an 80 lb. bag of special pulverized compost limestone—BOTH for $5.99, shipped freight collect. Check and clip this offer, and mail with coupon below.

MAIL TO → **BENSON-MACLEAN PLANT PRODUCTS, Bridgeton, 14, Ind.**
(Atlantic and New England States, address ActivO-SOILSERVICE, Box 131, Townsend, Mass.)

Inclosed is ..... for $..... Send the following:

☐ **Dozen No. 1 size cans ActivO for Cabinets or for activating soils only (each treats 35 to 100 lb. waste) at $2.40 doz., prepaid.**

☐ **No. 2 trial size ActivO, for 450 lb. compost, at $1.00 ea. prepaid.**

☐ **No. 7 size, for 1800 lb. compost, at $2.00 ea. prepaid.**

☐ **No. 50 size, for 6 tons, at $9.95 each, frt. or exp. collect.**

☐ **FREE literature; ActivO and composting.**

NAME .....

ADDRESS .....

P. O. and State .....

SHIPPING POINT If different from P. O.

MORE THAN A COMPOST HASTENER!

"BactO" in Canada

ACTIVO

Dealers—Write for special ActivO offer.

To have a healthy garden you must first have *healthy soil.* Don't waste time, seed and fertilizer on poor soil. Premier Peat Moss, 97% organic, gives your soil loam-like texture, making it more productive. It absorbs 20 times its own weight in moisture . . . loosens and aerates heavy soil . . . adds body to light soil . . . prevents leaching. Water and fertilizer penetrate deeply, feeding the roots as needed.

Remember, your garden can be no better than your soil. Get Premier Peat Moss, with the certified seal, at your dealer's now

PREMIER PEAT MOSS

Use this SOIL BUILDER and PLANT FOOD

DOUBLE Action in ONE Application

Premier-Nure, an all-organic fertilizer, supplies your soil with the two essential requirements for vigorous growth. With one application, it gives your soil *correctly balanced plant food* AND *soil builder*. Makes your flowers, vegetables and lawns thrive. Non-burning. Easy and pleasant to apply. Get your Premier-Nure now at your dealer's, or write to us.

Premier-Nure

PREMIER PEAT MOSS CORP.
535 Fifth Avenue, New York 17, N.Y.

UC GARDEN MULCH

- AN ORGANIC REVITALIZER
- NOT CHEMICAL
- EXCELLENT FOR GARDEN COMPOST

Fertilizes and promotes organic activity in soil. Helps to aerate—aids worm life propagation. Very beneficial to plants, flowers, shrubs and trees.

30 DAY SPECIAL
5 cartons, 200 lbs., $5 F.O.B. Chicago

ORDER FROM
UNITED CHEMICAL WORKS
169 173 N. PEORIA STREET CHICAGO 7, ILLINOIS

MORE OR LESS ORGANIC?

Why I have *not* re-newed.

I am in complete accord with your ideas regarding the use of organic matter in gardening. However it becomes just a little boring to read the same thing in every issue—as if each was addressed to a person who had never heard of it.

Call the mag. "Organics"—there is very little regarding gardening in it.

B. F. Fisher,
210 Forest Ave.,
Pacific Grove, Cal.

•

PEAS

In his recipe for a successful crop of peas, Mr. Wickenden, like the man on the radio, overlooked a little detail. The detail is the little matter of weather. It may not be impossible to grow peas in Long Island, kissed as it were by the breezes of two oceans, or in Connecticut, but by and large it is the weather which decides how much of a crop of peas Mr. Wickenden is going to have.

It was no great feat to have grown a successful crop of peas in 1946 or in the year previous; I grew a bumper crop myself, and here where we have the worst climate this side of Hades. I planted my peas on March 14. My neighbors, unlike those of Mr. Wickenden, were not even surprised; anything can happen in my backyard.

The peas germinated promptly and evenly and grew like weeds. They were too close and I did not thin them but the cutworms came to my rescue and did a good job. It may be the first instance in which that frightful pest did something useful. My peas are described in the catalogue as growing from 15 to 18 inches and requiring no support. I thought I would give them

some but the material I had was much too big and I shrank at the thought of trimming it down so I stuck the brush as it was. In no time the pea vines had clambered all over forming a mound more than twice 18 inches high.

I made the first picking May 15. I can give no idea of the total yield. From a row 34 feet long I picked two quarter baskets for the family at least every other day, from May 15 to June 20. We gave many away and I had to remove many more from the vines because they could never be used. Those were peas to smack your lips at. I do not think it possible to grow anything better.

According to the law of averages I can not hope to have another Pea season in seven years, but I am going ahead with my plans and preparations for next year just the same. I have already dug a trench about 18 inches wide and some 24 inches deep. At the bottom I put a thick layer of trash, then another layer of compost screenings, then wheelbarrowful after wheelbarrowful of leafmold (I had no compost) then the top soil I had removed, then a generous sprinkling of Dolomite limestone. On either side of the row I plan to plant a row of Atriplex hortensis to shade the peas. West of and parallel to the pea row is the tomato row. Between the two rows I dug a deep trench and lined it with charcoal. The trench is to be filled with water for irrigation purposes if rain fails, and the charcoal is put there in the hope that it may take some of the curse out of chlorinated water, for I am very, very suspicious of chlorinated water.

The rest is in the lap of the gods or rather in the lap of the weather man, for if the weather man is not propitious nothing that I or Mr. Wickenden can do can make a crop of peas successful.

Manuel Calvo,
Kensington, Md.

•

CHICKENS AND APPLES

A few lines concerning the wonderful effects of fresh chicken droppings

Consider the Soil First!

Insure garden success! Start right! Condition the soil! Healthy, vigorous-growing plants begin with good, fertile soil.

NO WEEDS
NO WATER
NO ODOR
NO ACID

HERSHEY'S

Ko-K-O

ORGANIC SOIL BUILDER AND CONDITIONER

FOR LAWNS AND GARDENS

- Apply Direct to the Soil
- Mix in the Compost Heap
- FEED TO EARTHWORMS

An essential material for the Organic Gardener . . . . A slow-acting, long-lasting energizer that increases and replenishes the organic content of the soil . . . . Improves soil texture . . . . absorbs and retains plant-nourishing moisture . . . . helps decomposition of soil break-up into humus . . . . binds sandy soils . . . . loosens clay soils.

WHAT IS HERSHEYS Ko-K-O?

Cocoa bean shells and other parts of the cocoa bean are expertly blended and sweetened to produce a natural, organic material furnishing a steady source of humus for the soil.

PACKED IN HANDY 50 LB. BAGS

If your dealer cannot supply you we will ship direct to you. Freight prepaid East of Mississippi River. (Write for freight rates west of Mississippi River.) Send $2.25 for each 50 lb. bag; enough for 200 sq. ft. of NEW lawn or garden. Minimum Shipment 100 lbs. (2 Bags).

HERSHEY ESTATES

HERSHEY, PENNSYLVANIA

DO NOT DIG SOIL MORE THAN 6 INCHES.

Don't bury the precious thin layer of top soil. Don't dig up the raw subsoil and stuff it with fertilizers. Do as Nature does. Get bigger, healthier, more nutritious, more flavorful vegetables—and more luxuriant flowers.

AMAZING DISCOVERY BRINGS RECORD CROPS

For years the dream of every farmer and horticulturist has been to duplicate the rich, black springy soil of the forest. And now at last science has made it possible for you, EVEN ON POOR LAND—by means of

ALKEMI
SOIL ACTIVATOR

This scientific wonder worker is an organic soil enricher, prepared in the laboratories of American Soil Products Co., Inc., under special formula by Dr. Earp-Thomas, well-known soil biologist. It is ACTIVATED by nitrogen and billions of bacteria which open and enliven the soil, fix nitrogen and release soluble plant food. It also contains over 20 different minerals and growth-promoting Hormones and Enzymes. Absolutely odorless and free from harmful fungi or molds.

Will not burn the tenderest roots. Increases root growth, gives plants greater vigor and resistance to disease. Hastens maturity and tremendously increases the yield. Makes vegetables richer in vitamins and greatly heightens flavor.

Bacterial Breathing Area

ALKEMI
IS PACKED IN CLEAN TIN DISPENSERS

5 lbs.	sufficient for	600 sq. ft.	$2.00
10 lbs.	"	1200 sq. ft.	3.00
25 lbs.	"	3000 sq. ft.	6.50

AT GOOD STORES EVERYWHERE
or order direct
AMERICAN SOIL PRODUCTS CO.
Dept. D, 280 Broadway, N. Y. 7

WHOLE WHEAT FLOUR

From wheat grown in Deaf Smith County, Texas. Stone-ground to a fineness suitable for every baking purpose.

5 LB. BAG
$1.00 Plus Postage
Write for Contract Prices

VITAMIN PRODUCTS CO.
Dept. G Milwaukee 3, Wisconsin

STURDY HARDY PERENNIALS

Strong, well-rooted plants, packed to carry safely coast to coast, and then live, thrive, flower. Hundreds of kinds, many rare and unusual, in our New Illustrated Catalog. Ask for your copy.
REX. D. PEARCE, Dept. D, Moorestown, N. J.

on a Rhode Island apple tree. This tree is twenty-five years old. The apples each year for the last ten, would crack open, rot and drop off. This process began when the apples were about half grown, and by picking time there would be few apples on the tree.

In the fall of 1945, two bushels of fresh chicken droppings, containing hydrated lime that had been sprinkled on the dropping boards, was scattered on the ground under this tree, extending outward from its trunk to the tips of the limbs.

The 1946 crop was picked September 24 and put in cold storage. There were a few cracked apples, but they did not rot on the tree to any extent. The apples were placed in cold storage the day they were picked, and removed out of cold storage Dec. 24, three months to a day in cold storage. The apples were in as sound condition as the day they were picked.

C. C. Patchen, M. D.,
Jacksonville, Ill.

•

BONES

In one of your issues you told about planting fruit trees and other trees. We have always kept our dog bones and when we are ready to plant a fruit tree or even berry vines we bury a couple of bones a foot below where the roots will be. The result is very profitable. My husband was an agricultural chemist and banked a great deal on organic gardening and compost treatment.

Mrs. S. H. Hartung,
2616 Hillside Drive,
Burlingame, Cal.

Berry and Vegetable Plants

Asparagus, Rhubarb and Horseradish Roots
Price List on Request
FIELD PLANT FARM
Sewell New Jersey

LEAVES and SHRUBS

About 5 years ago, quite by accident, I discovered the value of mulches of leaves etc. Having a country place that I usually visit the last time about Nov. 15th, I raked a mountain of leaves from the lawn into 230 feet of shrub borders and all over the garden. When I was through the leaves were waist high over everything. I had to leave them but intended to come up once more and finish the job by throwing these leaves in the woods. I never got back that fall and worried about it all winter. I intended to get there early in the spring and clean them off. Well it so happened that I didn't and that year, in spite of insufficient rain I had the best garden and shrub border I ever saw. Everything came up through the leaves, more than half of which had been pulled into the ground by the worms. It was amazing how things grew and flowered and how green and healthy they looked. I had always practiced clean cultivation and in spite of everything I did the phlox would lose their leaves three fourths of the way up the stems and never were anything to brag about. They looked so healthy coming up through the leaves I decided not to clean off the garden and see what would happen. Believe me, the garden never had approached such perfection. The phlox I mentioned, had heads 10 to 12 inches in diameter and were really something to look at and show off and their leaves did not turn brown and dry up. Everything looked so good and healthy that I did not spray anything that year.

Every week I would lift up the leaves and the ground would be wet and lots of worms on the surface, although we had no rain for weeks and I did not use the hose. The azaleas, rhododendrons and dogwoods were outdoing themselves, as were all my deciduous shrubs. I didn't know whether to give credit to the leaf mulch or call it a lucky season, but after looking at similar shrubs in the neighborhood I decided to try it again

Plant

AQUILEGIA

COLUMBINE

For a Gay Effect in Your Spring Garden

These native flowers of North America are very popular as cut flowers. Will grow in any location but give best results in well drained and sunny spots.

We offer these choice varieties:

MRS. SCOTT ELLIOTT'S HYBRIDS—fine field-grown plants of the long spurred Columbine running in shades from light blue to pale pink, creamy white, delicate lavender, brilliant scarlet, etc. When used en masse or interspersed in the hardy border they give an effect of airy daintiness not attained by any other flowers. In assorted colors only.

..CRIMSON STAR—very lovely rich crimson, with a white center. Flowers from early May until heavy frost.

YELLOW HYBRIDS **WHITE HYBRIDS**

All these plants will flower this year.

50 cents each **$35.00 per hundred**
$5.00 per dozen **(f. o. b. Madison)**

Send for our new beautifully illustrated catalog. The 25c charge will be deducted from your first order.

BOX O
MADISON, N. J.

Tottly's

GREAT VALLEY MILLS
Paoli, Pa. — Est. 1710

GET YOUR VITAMINS DIRECT from NATURE. According to standard authorities, wheat germ contains vitamins A, B, E and G.

$1.00 BUYS ANY OF THESE PARCEL POST DELIVERED: West of Miss. Add 25 cents

3 lbs. Plain Wheat Germ
3 lbs. Caramelized Wheat Germ
60 perles (2 months supply) Wheat Germ Oil
200 Tablets Sea Kelp
10 Chocolate Covered Vitamin Mineral Food Bars
5 lbs. Scotch Oatmeal
5 lbs. Old-Fashioned Hominy
5 lbs. Old-Fashioned Hominy Grits
5 lbs. Old-Fashioned Buckwheat Flour
5 lbs. Water-Ground White Corn Meal
5 lbs. Water-Ground Yellow Corn Meal
5 lbs. Water-Ground Whole Wheat Flour
5 lbs. Soya Bean Flour
3 lbs. Mammoth Sunflower Seed

SEND POSTCARD FOR FREE LIST OF OTHER WATER-GROUND PRODUCTS; ALSO FOR INFORMATION AND PRICES OF QUICK-RETURN COMPOST ACTIVATOR HERBS—Maye E. Bruce Formula

NOW AVAILABLE—ORGANICALLY-RAISED CORN AND WHEAT FLOURS AND MEALS
Write For Prices and Information

THE GREAT VALLEY MILLS, Dept. O.G., Paoli, Pa.

Enclose $..... Send order as checked above to:

Name .....

Address .....

NEWS *about* TULIPS

1947 Nelis Catalog tells all about Newest, most outstanding Tulips!

Special presentations of rare varieties of new exotic types at never-before low prices

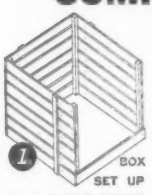
Large, color illustrated Nelis Catalog brings you up to date on all the finest, newest, most noteworthy Tulips. A MUST for every Tulip lover. Send for your free copy — today. Limited edition — act now.

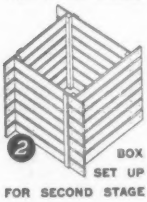
NELIS NURSERIES, Inc.
205 Lakewood Blvd., Holland, Mich.

Nelis TULIPS

See them in bloom at Tulip Time in Holland this May.

FIRST TIME ANYWHERE!
The Pre-fabricated
WILLOW GROVE COMPOST BOX





Imagine! One box does the work of two. Novel take-apart feature helps save time and fuss when it's compost-turning time. Designed so you can erect and re-assemble in a few minutes. No tools required. Ruggedly constructed. Complete with hardware fittings. Consists of only 3 pre-assembled sections. You fasten front slats as heap builds up.

HOW TO USE

1st Stage—Erection. Bolt pre-drilled sections together. Fasten front slat. Fill with compost materials. Fasten front slats as required.

2nd Stage—Time to turn heap. Dis-assemble box and set up in 2nd arrangement. Transfer material into box. Makes enough finished compost to cover 300 sq. ft.—2" deep.

Shipped knockdown. Satisfaction guaranteed or money refunded.

ONLY $17.75 Complete
Shipping charges extra.

Willow Grove Earthworm Hatchery
Sinclair Building
Easton and Old York Roads
WILLOW GROVE . . . PENNSYLVANIA

in the fall and have been doing it ever since with good results.

I never used fertilizer in the last 12 years and each year people say "what kind of fertilizer do you use and you must use an awful lot." When I tell them I use none they give me a look which plainly says, "all right, keep it a secret," and I'm sure they feel I use something magic and don't want them to have it.

Am sorry I didn't have "Organic Gardening" years ago, but from now on I think I understand the reason for things, thanks to your wonderful articles. I now regard most of what is written on gardening today as pure super and hyper scientific bunk.

A. O. Carlson
7126 73rd. Street
Glendale, N. Y.

•

MOVE TOWARD COMPOST

I read this in "Christian Life Letters" and thought it should be passed along. "Can vegetation move itself?" So here it is. It was under the name of Rev. W. M. H.—Tunkhannock, Pa.

"My mother had some rhubarb plants which actually shifted their location, by more than a foot. She had compost pits, or piles to nourish her much loved roses in the back yard. She made one such heap, a foot or more, from a rhubarb plant.

"When she started to move the compost for use on her roses, she noticed the rhubarb had sent out roots to tap the richness of the compost. Observing this, she left quite a bit of compost in the pile to see what would happen.

"Slowly, yet definitely, the whole plant inched itself nearer the source of nourishment, so that today, months later, her rhubarb plant is now situated exactly in the middle of what was once her compost pile."

I thought this so remarkable, I would send it to *Organic Gardening*.

L. C. B.
Hinton, West Virginia

RASPBERRY PLANTS

Ready for immediate delivery. Will bear this summer.

	Per 10	Per 25	Per 100
Heavy Plants, 2 year, Transplanted	$3.00	$7.00	$25.00

INDIAN SUMMER. Everbearing Red. Bears in June and September.
MORRISON. Black. Berries averaging almost one inch across.
SODUS. Purple. Most productive of all raspberries.

Guaranteed to grow. Add 5% for postage. Cash with order or C. O. D.

RASPBERRY COLLECTION (GROUP NO. 708)
This collection should yield an ample supply for an average family.
30 Raspberry plants, 2 year, Transplanted, ready to bear this summer (10 of each variety listed) for only $8.00 (add 40c postage).

STERN'S NURSERIES **Dept. O** **GENEVA, N. Y.**

SHREDDING LEAVES

A hammer mill isn't practical in a residential district, but I have hit on a machine that with a few changes will do an even better job, and that is a tobacco cutting machine used for shredding the tobacco leaf to reduce it to cigarette and pipe size.

What I did so far was spreading the leaves over the lawn and running over them with a lawn mower. The result was very gratifying to the extent that I could gather up a sizeable quantity.

R. D. Walker,
17 Central Drive,
Port Washington, N. Y.

NOTE:—Other equipment suited for the purpose consists of silage cutters and soil shredders. Soil shredders have been discussed separately.

MONTHLY VISITOR

I don't have words to praise compost enough. Thank you for a truly fine helpful monthly visitor, *Organic Gardening*. It should be used in the schools. I am very happy to be among your lucky subscribers.

Alma Perry,
Rt. 11, Box 691,
Fresno, Cal.

NOW! HUMUS FROM COMPOST IN 1/5 USUAL TIME

Great discovery cuts composting time from year or more to around 8 weeks

There is no need, any longer, to wait and wait for your compost pile to "convert" to humus. Nor do you have to worry, any more, about the scarcity of manure. In about 8 weeks you can produce rich, black, fine humus from grass-cuttings, weeds, vegetable peelings, coffee grounds, clearings of beds and borders, any composting material.

A formula of herbal activators discovered abroad cuts the time of Nature's slow process and saves the usual turning of a heap. It is a powder that, mixed with water, turns compost heaps to humus in miracle time. Directions with every order. Fill out and mail coupon below: money back if not satisfied. You can get this product only from us.

The Great Valley Mills
Box 2012, Paoli, Pa.

Please send me the items checked: my remittance is enclosed.

☐ Packet, "Q.R." Compost Herbal Activator, enough for 4 heaps up to 6 feet square, $1.00.

☐ Booklet (92 pp.) 'Quick-Return Method of Compost Making," by Maye E. Bruce, most interesting and helpful. 50c.

NAME _____

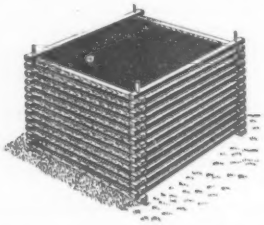
ADDRESS _____

_____
(Please print plainly)

• *Easily Set Up* • *Easily Dismantled*

"LEHIGH"
KNOCKDOWN
Compost Box

Designed by J. I. Rodale. Described in Organic Gardening, Dec. 1946, Page 9.



A BOON FOR COMPOST GARDENERS
SAVES TIME, LABOR AND FUSS

You can assemble box without tools. Pull out corner rods and wood pieces come apart. Consists of 2" x 4" oak strips, pre-cut and pre-drilled; four ½" dia. steel rods. Size set up: 8' x 10'; 4' deep.

$46.75
F. O. B.
Joanna, Berks County, Penna.

JOANNA LUMBER COMPANY
BIRDSBORO, PENNSYLVANIA

Help Prevent
Tooth Decay
With Marvelous New
Dietary Supplement

Editorials have been proclaiming the amazing nutritional substance BONE PHOSPHATE, as being able to arrest **Tooth Decay** when caused by a deficiency of FLUORINE and CALCIUM. There elements are held essential to sound teeth and enamel,—in retarding bleeding gums, erosion,—and essential to pregnancy and lactation owing to greatly increased Calcium needs. Bone Phosphate is rich in Natural Organic Calcium, Phosphorus, Fluorine and other essential minerals and elements as occur in beef bones. To supply the experimental demand developed by editorial furor without substantiation on our part, we offer Bone Phosphate in 1-Gram tablet-wafer and bulk powder form:

75 tabs. $1.40; 150 tabs. $2.50; 300 tabs. $4.00.
Bulk: 4-oz. $1.00; 8-oz. $1.50; 16-oz. $2.50.

Write for amazing free booklet!

NU-Age Products
1926 W. Railroad St.
Dept. O. G. **Loupurex, Penna.**

KANSAS GARDEN

Ever since I reviewed "Pay Dirt" at my Book Club (not a garden club) I have meant to write and tell you how much I have enjoyed it and the magazine *Organic Gardening*.

When I first began to get your advertising it was some time before I realized that you were not trying to sell some new kind of something to add to compost. I had tried so many kinds of commercial fertilizers and still I didn't have a very good garden. I had never been able to raise any tomatoes, only one or two little scraggly things from each plant and then fungus wilts, etc., finished them. We have a small farm fifteen miles from Wichita in the edge of what is known as the short grass country where our rainfall is not as much as it is in Wichita. Right now we are going through a protracted drouth, and there is never enough moisture. We raise wheat, alfalfa, some years a little corn, and have horses, registered Guernsey cows, Hampshire sheep and chickens and turkeys. We have mowed mountains of weeds and piled and dried them, then burned them. And I always felt it was wrong to do that. Eight years ago we moved to a larger place than we had had in town and since that time we have not been spending summers at the farm. Here in town we have 250 feet square and I began to make a compost pile of weeds, leaves and grass clippings. I added the ashes from the fireplaces, and had some manure hauled from the farm, never realizing that I was accidentally doing the right thing.

Last year somebody appropriated several wagonloads of my compost pile and I investigated and found that it was very fine black leaf mold or humus. We then spread it on the vegetable garden and flower borders. About that time I started to get your magazine and became enthusiastic over the ideas. I built a pen for the compost and used fresh manure—horse, cow, sheep and chicken, with wood ashes and half rotted leaves and grass clippings. We started this the first of

March and it was ready to use the first of June, a little rough but black and sweet smelling. It has simply been magic to my garden, and my friends are as enthusiastic as I am. Many of them have started taking your magazine at my insistence already.

I want to tell you particularly of one thing that may be interesting to some of your subscribers. I have not read of any other person having this experience. I had a row of everbearing red raspberries, almost impossible to grow here in this heat and dry winds. There were some berries last year but we never got to taste them as the robins ate every one. Also all my strawberries. Last fall I told a friend he could have the bushes if he would come and take them out. Illness prevented him and he asked me to wait until spring. This spring he did not come and the spring was early and the raspberry canes started to grow. They were literally covered with luscious big berries so extra large that people thought they were some new kind of a berry or were boysenberries. And best of all the robins did not touch them, and the reason they didn't was because there were plenty of worms and robins prefer worms to berries. My son who was just out of service wanted some worms to go fishing and said he would go and buy some. I told him to wait and I took him out and showed him where to dig. He turned two forkfuls over and we counted 29 worms fishing size.

I planted two dozen roses, hybrid teas in April. Usually they bloom in spring, then dry up and sulk all summer and put out some new growth and a few good blossoms in the late fall. My 24 plants have bloomed all summer, today the temperature is 109° officially, with a hot dry wind blowing and I picked several large white roses, the difficult ones usually. And the yellows have all survived and grown and bloomed. It seems almost a miracle. I have not sprayed once but have two plants with black spot so will spray them a little now.

I bought some large potted tomato

Biggest Bulb Bargain in America

PLANTING STOCK*

TULIPS

100 BULBS $1.69

Amazing saving! Dozens of brilliant flaming colors in this Rainbow Mix Assortment . . . Darwin, Triumph, Breeder and Cottage Tulips for remarkable low cost of less than 2c per bulb! You see, these are hardy strain of young first year bulbs* especially selected by Dutch-American growers. Up to 50 blooms first season, and thereafter any bulb failing to flower five years to your complete satisfaction replaced free. America's greatest bulb bargain!

12 DUTCH IRIS BULBS INCLUDED

ORDER NOW... PAY LATER

SEND NO MONEY! Order, now, pay later. Bulbs reach you for fall planting for only $1.69 plus C.O.D. postage. Satisfaction or money back. Cash orders sent prepaid. Prompt action brings 12 genuine young first year Dutch Iris Bulbs, gorgeous new purples and blues, without extra cost. Send order to MICHIGAN BULB CO., Dept. BB-1811, Grand Rapids 2, Michigan.

SCIENTIFIC BEEKEEPING

New REVOLUTIONARY METHOD

Send for Valuable Free Bulletin

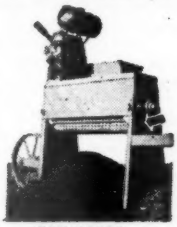
THE BEEMASTER

EARTHMASTER PUBLICATIONS

DEPT. 2, BOX 547 · ROSCOE · CALIFORNIA

For BETTER

COMPOST



W-W GRINDER and SCREEN

Grinds, or Mixes, or Screens

(PATENTED)

Discards Rocks and Trash

Grinds manure, sod, tough and wet materials **through rollers.**

Screens through perforated screens.

Makes perfect compost of any material used for compost no matter how hard or wet or stringy.

Ruggedly built for hard usage and to break up hard and tough materials. Long life and low operating cost.

FREE New compost circular. Facts of interest and real help to growers. Write for your copy. No obligation.

W-W GRINDER CORP.

Dept. T Wichita, Kansas

MODERNIZE YOUR GARDEN TOOLS WITH
TUG-O-WHEEL
COMPLETE GARDENING OUTFIT
Does away with slow, back-breaking spading.
Ideal equipment for vegetable gardens.
Improved all steel Gardening Outfit plows 5" deep, marks, hills and cultivates rows 12" to 36" wide.
Fast, efficient, easy to use.
Cultivator and many other practical attachments.
Patented
Thousands of satisfied users
Material and workmanship fully guaranteed.
Write today for information.
TUG-O-WHEEL HAND PLOW CO.
Dept. O Ballston Spa, New York

OREGON
GLADIOLUS
will give you outstanding flowers!
RICH'S *Supreme Mixture*
...is made up of selected varieties, TOP-GRADE bulbs, to give you a long season of
FINE CUT FLOWERS
12 Bulbs $1.25
50 for $4.75
100 for $8.50
postpaid
Send for Color Catalog of Roses and Nursery Stock
RICH & SONS NURSERY
Dept. K HILLSBORO, OREGON

'GRO-QUICK' ELECTRIC SEED BED HEATER
"ROOT CUTTINGS IN 6 DAYS"
"SEED UP IN 36 HOURS"
"CUT GERMINATION TIME BY ⅓"
"TRANSPLANT 2 WEEKS SOONER"

These enthusiastic reports from users tell what GRO-QUICK SOIL HEATING CABLE will do for you. Send today for testimonials and free, new instr. sheet with plans. For hotbeds—cold frames—unheated greenhouses—plant benches—for early plant starting in open ground. Operates from household current.
JUNIOR 40' Cable, 200 watt with thermostat for 3x6 bed or 20 sq. ft. $5.95
SENIOR 80' Cable, 400 watt with thermostat for 6x6 bed or 40 sq. ft. $6.95
Immediate prepaid delivery direct or thru dealer.
GRO-QUICK 361 W. Huron St., Chicago 10, Ill.

AN AMAZING SOIL CONDITIONER
VITALOAM
An amazing soil conditioner. Treats all types of soil for vegetables, flowers, lawns, trees, shrubs, bulbs, everything that grows.
POSITIVELY WILL NOT BURN
TRIAL SIZE $1.00 Ask Your Dealer or Write
SOIL RESEARCH LABORATORIES, INC.
YOUNGSTOWN 1, OHIO

plants and planted seed of Ponderosa right where they were to stay. They bloomed and fruit ripened only seven days later than the large plants I bought. I am picking large pound size tomatoes each day in this heat when many have only dried and dead plants. I have put compost around each one, and also they had the older compost spaded into the ground last fall. Behind my tomato rows I have a row of four-o'clocks with great cleome planted in the same row. The four-o'clocks are so thick and large they are hard to see over and the cleome has bloomed for weeks now and the heads come out with great pink crowns in the evening at the same time the four-o'clocks open. Incidentally, during this heat and drouth the four-o'clocks do not open until six.

I am a grandmother and all my life I have been an inveterate reader of garden books and magazines, and I want to compliment you on the articles you are publishing. For instance when you have an article on the iris and mention that there is an iris society you go on and tell where it is making it unnecessary for a subscriber to write and ask. I have enjoyed it more than any other garden magazine I have ever had.

I can hardly wait to get enough compost to make my lawns over. Last fall I raked leaves in the street and saved a great many more than my own trees made. I have about sixteen very large elms and many other varieties of trees with only a small square about fifty feet each way for my garden. I have some Japanese Iris, or Kaempferi, the only ones I know of in this locality, bearded iris and some of the other touchy kinds. I planted bulbs right over that spaded in compost last fall and I never saw such narcissus and hyacinths. When I see a plant looking sick I run with a little compost and it is just like a dose of medicine.

We lack lime in our soil here, in fact our County is helping to put lime rock on the farms and we have just finished putting some on some of our land. I

plan to use some of it in my next compost pile.

I wish you might have seen the lilacs I had last spring, New England never had any lovelier. Great trusses eighteen inches long. I put old plaster in where I planted them and fresh manure under them.

I am subject to hay fever, directly due to lack of calcium, and I am eager to see if eating vegetables grown with compost will not help this. I shall let you know if it does.

Many friends come to look at my compost pile and ask the why and how. I am asked to review "Pay Dirt" again for a Garden Club.

Now my husband and I are anxious to get some composting done on our farm. There is no doubt in my mind but that everything you have said about it is true.

Zana Henderson,
125 South Crestway,
Wichita 8, Kansas

•

ARIZONA COMPOST

I started a compost pile here a year ago for the vegetable garden, and have turned it over several times, and just today I inspected it and was amazed to find that it had completely deteriorated and looks very good.

Albert H. Steinbrecher,
Maple Rd., R. F. D. 5,
Box 237, Tuscon, Ariz.

•

SEAWEED

We find your magazine, *Organic Gardening,* most interesting and helpful. We have 3 compost piles heating and have started earthworm culture beds. As we live near the coast, our next experiment is going to be with seaweed. Life has become more interesting and we believe we are on the road to better health, thanks to your publication.

Clarence F. Zieg,
6113 Pennswood Ave.,
Bellflower, California

IRIS HEMEROCALLIS
POPPIES and PHLOX
FREE
Our natural colored Iris Catalog
Wittman's, Dept. O, Clifton, N. J.
WITTMAN'S ORCHIDS IN IRIS

The GRAVELY
GARDEN TRACTOR & POWER MOWER
Three machines in one.
Ideal for the Estate Owner.
Cultivates your garden . . cuts tallest weeds . . mows your lawn
GRAVELY MFG. CO. Box 548 Dunbar, W. Va.
WRITE FOR CATALOG

RAPID COMPOST
Fertilizer in 3 to 5 weeks!
Treat with ActivO—a multi-use garden product. Organic; bacterial. (No dangerous chemicals; no herbs!) No manure necessary. CONVERTS *GARBAGE* WITHOUT ODOR!
Low cost. No. 7 size, only $2.00, treats 1800 lb. waste; No. 25, $5.99, treats 3 tons. No. 50, $9.95, 6 tons! . . . . Cans, for Composter Cabinets (each can treats 35-100 lb.), $2.40 dozen.
Order today—have organic manure for your Spring Garden.
ActivO-SOILSERVICE
P. O. Box 131-EA2 Townsend, Mass.

FENCING FOR YOUR FARM
*All-Purpose Steel Fencing, Poultry Fencing and Netting, Welded Wire Fabrics, Field Fence, Barbed Wire, Steel Posts, Electric Fence Controllers, Chain Link Fence, Chestnut Post and Rail Fencing, Hurdle Fences, Gates, Other Farm Values.

ARNOLD-DAIN CORP.
BOX 20, MAHOPAC, NEW YORK

MUL-Tex REG. U.S. PAT. OFF.
Protect Your Plants With
Buckwheat Hull Mulch
Clean, odorless, easy to use.
200 lbs. $5.00; 500 lbs. $10.50; 1000 lbs. $19—all f.o.b.
Larrowe Mills, Inc. Box 10, Cohoctan, N. Y.

With The Editor

Town Garbage Disposal

VERY little has been done in this country in the way of municipal projects for composting town wastes, but good progress seems to have been made in New Zealand, South Africa and in England. Recently letters have been received in connection with plans to devise methods for converting such household refuse into humus, asking for information. I recall communications from Toledo and Middletown, Ohio. However, there is practically no information or experience available. A movement could be set on foot to get the U. S. Government to start an experimental project going.

The handling of town wastes or garbage should not be confused with the making of sludge from sewage. Household wastes in the average town in Pennsylvania are picked up by truck and in many cases are brought out to farmers who feed it to pigs. It would be better if it could be composted in some manner. In the nearby city of Allentown, whose population is about 100,000, the garbage is burned in a municipal incinerator at a high cost to the city. No thought is given to the irreparable loss to the land of this valuable organic matter, to the benefit of the health of the inhabitants if it were composted and returned to the soil. It is wantonly destroyed.

What town is going to be the first to set up a plan for handling these wastes by the Sir Albert Howard method of composting? Such a city will attain national fame. I am reproducing herewith a letter dated March 7, 1947 that we received from the Rockford, Illinois, Men's Garden Club. It is a good start:

Dear Mr. Rodale:

Our Men's Garden Club are devoted readers of "Organic Gardening," and noting your query, "Town? Garbage" believe that other readers will be interested in a good start our city has made in this direction. We submit the following:

Soil from Garbage.

The Men's Garden Club in Rockford, Illinois, a community of 100,000, are actively supporting the Sanitary Land-Fill method of disposing of all refuse that has now proven itself through two winters and last summer. It is a sub soil builder and consists of:

1. The householders draining and wrapping the garbage to keep the cans, collection trucks and the fill clean.

2. Collecting all refuse, garbage, ashes, cans, etc. in one truck which insures even mixing, and taking it to land that needs raising, or needs good sub soil.

3. Dumping it into a wide shallow trench.

4. Packing it down with a tractor bull-dozer.

5. Covering it hour by hour with the top soil from the next trench, there is no odor, rats, flies or fires.

Half of the tonnage is plant food and

humus. A five foot high fill improves ¾ acres a year. Collecting ALL refuse at the same time and packing it in our "Sanitary Land Fill" saves about $80,000 a year as compared with one separate collection and burning of the garbage and combustibles, and another collection and open dumps for the ashes, cans, etc.

The high cost of separate collections prevents destroying this material by burning, but it also prevents us from turning separated garbage into top soil fertilizer.

Our Farm Advisor states that, "The Sanitary Land Fill" puts this material back into and makes good soil by the chemical actions among the various materials in the fill digesting a large part of it; the soil bacteria gradually working down; nature's plow, the earthworm, aerating it and bringing the plant food to the surface for many many years; and by it retaining the moisture.

It is ideal,

1—for raising low ground,

2—improving too sandy or gravely soil,

3—stopping up gullies and run offs on farms,

4—making future playgrounds, parks, and gardening tracts for our cities;

5—it can be used and worked as soon as filled, and we will sow and plow in a green manure crop first to give it a quick start.

6—it is the most economical and satisfactory way of disposing of ALL city refuse besides all the above advantages.

Signed:—

Roy Y. Gayle, Pres.
R. H. Shumway, Secy.-Treas.

A few years ago we were able to secure tons of chicken cuttings from wholesale poultry markets. At first we placed this material in compost heaps, but we never could control the unpleasant odor of this type of animal matter. We then worked out an idea which solved the problem nicely. We set aside a five acre section which we decided to fallow for a two year period. With our plow we made a furrow. We went over it a second time to deepen it. In that trench we deposited the chicken cuttings each day as our truck picked it up, and then shoveled the soil over it. The odor was successfully taken care of by this method. In a matter of a year or two the material became thoroughly decomposed.

It would be unsafe to plant a crop directly in such raw matter. I recall a case in California where there was a severe outbreak of intestinal disturbances in a certain community. One of the physicians tracked it down to a certain orange grove where raw garbage was placed under the trees each year. In Paris there are tremendous community garbage heaps which are made in outlying sections and allowed to decay for eventual use on the land. Some of the Parisians do not seem to be able to wait until the process of decomposition is completed and use some of the material in their garden in a raw state. It is for that reason, say the authorities, that many Parisians are afflicted with intestinal parasites. The best results will be obtained, from both an agricultural and health stand-point if your compost is not used until it is completely decayed. It does not have to moulder to a powder, but should be quite dark.

The method that we have used, as described above, should be applicable to the problem of disposing of town wastes. It is one way, perhaps not the best, but it is a beginning. The aid of farmers surrounding the town should be enlisted as it will help their land. A farmer must agree to fallow a certain field for two years. He is also to provide the trenches where the town employees could dump the garbage. A committee appointed by the town could check up to see that no crop is grown there for two years. It is a simple method and as the years pass, the lands surrounding the town would become more fertile. The people of the town would benefit by it.

J. I. RODALE

The Work of the Soil Population

By SIR ALBERT HOWARD, C.I.E.

NOTWITHSTANDING the fact that the chief agencies employed by Nature in her management of the soil are confined to living things, but little attention has been paid by the modern experiment stations to the life of the soil considered as a whole. As is well known, even the existence of the soil population—earthworms, fungi, bacteria and protozoa in particular—was not fully realized when the Broadbalk wheat plots were laid down at Rothamsted some hundred years ago. These arose out of Liebig's ideas on plant foods and were designed to prove that a suitable mixture of dead chemicals could replace living farmyard manure. As is so often the case in formal experiments the investigators forged their own chains and put their minds in bondage to a preconceived idea. They duly discovered the things they set out to find. They did more. They started Rothamsted off along the wrong road: they enthroned the NPK mentality, on which the artificial manure industry was quickly founded, and they have kept in blinkers such bodies as the Ministry of Agriculture, the Agricultural Research Council, the agricultural colleges, the agricultural press and the advisory services for the farmer. Incidentally the worship of the Broadbalk results and of the higher mathematics have reduced Rothamsted to a condition of complete sterility.

But in this dismal man-made picture a ray of light is at last appearing. The Agricultural Research Council is beginning to emancipate itself from the NPK mentality and the tyranny of the manure bag and the spraying machine. A new step forward in agricultural research has been made. At long last the soil is being studied as a vast biological complex in which myriads of active organisms are competing with one another for the available supplies of organic matter and minerals. These living things always establish between themselves a dynamic equilibrium which is constantly changing with every alteration in the physical and chemical environment and according to the climatic changes imposed by the seasons. Side by side with all this activity on the part of the soil population are the absorbing areas of the roots of crops which play a most important part in the life of the soil. Compared with this ceaseless activity the chemical analysis of the soil at any given moment and the transient effect of a sudden deluge of chemical manure, pitchforked as it were among these competing organisms, can only be factors of secondary interest. What is obviously of much greater moment is to see to it that the needs of this soil population as regards food and housing are always provided. If this is faithfully done everything else will follow.

It was therefore only a question of time before the authorities concerned with agricultural research in Great Britain — the Agricultural Research Council—would realize that the investigation of manurial problems would have to be directed into a fresh channel.

A new and independent Unit of Soil Metabolism has been started at University College, Cardiff, under the direction of Dr. J. H. Quastel, F.R.S., who in a recent lecture delivered to the Royal Institute of Chemistry at

the London School of Hygiene and Tropical Medicine has explained in detail the purpose of this project.

A study of this lecture leaves no doubt about the wisdom and prescience of the Agricultural Research Council in deciding to break jail, as it were, and to make a fresh start. In the essential act of organization—the selection of the man or woman to direct research work—they have undoubtedly found just the man for the task. Few scientific papers I have read during my years of retirement have given me so much pleasure as has the study of this lecture. At long last a break with Rothamsted tradition has been made. The soil is being studied as a living whole—the biological, physical and chemical aspects have been merged into a single undertaking. An intelligent synthesis has replaced sterile fragmentation. New and original methods are being devised for this study. An important discovery has already been made.

This advance refers to one of the trace elements in the soil—manganese—minute quantities of which are needed for the work of the green leaf. It has been shown that this element can only enter into the transformations in progress in the soil and then into the plant itself through bacterial action. The soil bacteria make inert manganese available by presenting it to the roots after they have brought about a series of changes. In a manganese-deficient soil the addition of more manganese by itself makes no difference. The soil organisms must first play their part.

The role of the soil population will not be restricted to dealing with manganese. These organisms are certain to play an equally important part in the supply of the essential phosphorus. Some years ago, when on the staff of the Pusa Research Institute, I had occasion to study for some nineteen years a soil containing only a small fraction of the minimum amount of phosphorus needed for a crop. Nevertheless these soils were remarkably fertile. They maintained a population of over 1200 to the square mile and exported every year large quantities of seeds, cattle and human labour: no extraneous phosphorus was imported: the soil made no appreciable response to phosphate in any form. Practice and science were thus at loggerheads. The most likely explanation of this apparent contradiction lies, I think, in the effectiveness of the root systems of the local flora in combing the soil for minerals down to 20 feet below the surface and to the fact that the small quantities of phosphorus present are left in the organic condition.

It is certain that a detailed study of the nitrogen cycle at this new station will also achieve notable results. There is here a vast field of work lying ready to hand. A scientific explanation is needed to clear up the difficulties encountered in applying the lessons of Bombay to the successful cultivation of leguminous plants. These crops need freshly made humus applied before sowing to produce full crops of seed or to enrich the soil when used for green manure. The root nodule does not suffice and appears to be only a means of preventing nitrogen starvation. In all these matters practice is far ahead of theory. What is needed is a constructive scientific explanation of the whole subject which might easily lead to fresh advances towards the ultimate solution of the nitrogen problem.

As new methods of research are devised at Cardiff for synthesising and recording, throughout the season, the activities of the soil population looked at as a whole, it is not too much to expect that this new Unit of Soil Metabolism will produce results which will accomplish much more than the explanation of successful practice. It may very easily lead farming in new directions.

One danger will have to be avoided. The workers must not be hampered in their quest by obsolete ideas of organization. There can be no progress in these matters without freedom. The workers must always be provided with the liberty and the means to follow the gleam whithersoever it may lead.

PEAS

I have just finished my second heap and am trying to get enough material for the third one. So far my peas have grown about three inches tall and are growing fast while the other farmers are still waiting for theirs to come up.

J. L. Creecy,
Texarkana, Ark.

—o—

INSECTS DISAPPEAR

For the last fifteen years I have been doing considerable gardening. The city hauled to my place ten loads of leaves last year and I started to use your method of composting. I have noticed that the bean beetle and his hungry family have almost disappeared. I read your magazine practically from cover to cover.

C. Mielke,
3141 Sunshine,
Cincinnati 11, Ohio

—o—

TOMATOES IN INDIANA

In this part of Indiana we did not have any rain for ten weeks. But in consideration of this fact, my gardening partner and myself had just as good a crop of tomatoes as if it had rained. Some of our ground received some water but other parts of it was not watered.

First, I raised our plants. One of the first considerations in raising a good crop of tomatoes is to see that the tap root of the plant is not broken off. When my plants were taken from the seed bed they were planted into plant bands so they could be transferred to the ground without disturbing the roots. Second, each plant received two shovels of compost well spaded into the soil. In spading this compost in I took pains to spade deep enough to break up the plow sole so the tap root could go down. Third, I do not believe that tomatoes should be staked. We are told by Purdue University that the hot afternoon sun kills the blossoms. They further say that tomatoes should be planted on the east side of two rows of corn so that they can be shaded from the hot afternoon sun to keep from killing the blossoms. I found that by not staking our tomatoes the blossoms were protected by the vines. Fourth, tomatoes should not be trimmed. The suckers, as they are called, protect the blossoms and, as the food which makes the tomatoes is made in the leaves, they should not be cut off.

Now what was the result? Everybody that saw our tomatoes said it was the finest patch in the country. There was no disease. The only tomatoes that rotted were those that lay on the ground and were eaten by worms, which were very few. Fordhook Hybrid and Burpee's Hybrid went almost a peck to the plant. The Jubilee, which averages about 12 oz., went well over a pound. About five or six went a pound and a half. I weighed one of the beefsteaks that weighed 1 pound and 13 oz. These large plants

bore a peck to the plant easily. When frost came we had all the tomatoes that the two families could use, we gave our friends tomatoes until they told us not to mention the word "tomato" to them again and left about five bushels on the ground to rot. I must not forget to say we had fifty plants. I forgot to state that the quality was excellent. The sweetest tomatoes I ever ate.

Dr. Roy Rhinehart,
2306 Kenwood Ave.,
South Bend 19, Ind.

—o—

ALL-AROUND SUCCESS

I got some very good results from my two small compost heaps. People all around complained about black rot on their tomatoes, but I did not get any. My parsnips were three inches across and over a foot long.

W. H. Gamble,
83 Cherry St.,
Waltham, Mass.

—o—

PANSIES

We cannot recall a time when we did not have a compost pile. We used to get from our city street cleaning department about twelve loads of leaves. These were unloaded in a pile and left right there until the following summer. The compost pile consisted of six inch layers of fresh dairy yard scrapings, sod, and the leaves from previous year. These were piled up, the sides held by boards, and the whole soaked down several times very thoroughly. It was then left to be finished by the winter rains and was ready for use the next spring.

We bought peat moss in wholesale quantities since its use was advocated by authorities here and abroad. We used chicken droppings purchased from a poultryman whom dad had persuaded to use peat moss in his hen house instead of straw. This made a wonderful fertilizer for the pansies which are exceptionally heavy feeders.

We were forced out of the city by ever increasing demands for our pansy seed and are located just across a country road from a large and modern dairy. We no longer have access to city leaves but use grass clippings and waste matter instead and still rely on the compost, especially for our germinating beds.

The compost cannot possibly be improved on for germinating. We planted less than one ounce of seed to a bed five by forty feet long and if we did not get 100% germination, it was close enough so that our plants were still pushing each other aside to get the best place in the sun. It seems that while any other form of fertilizer is too strong for germinating the seed, apparently the little seedling is able to make use of the nourishment in properly composted matter practically from the time respiration begins. This gives us strong, sturdy, and compact seedlings to transplant in about six weeks time.

Steele's Pansy Gardens,
2715 S. E. 39th Avenue,
Portland 2, Oregon

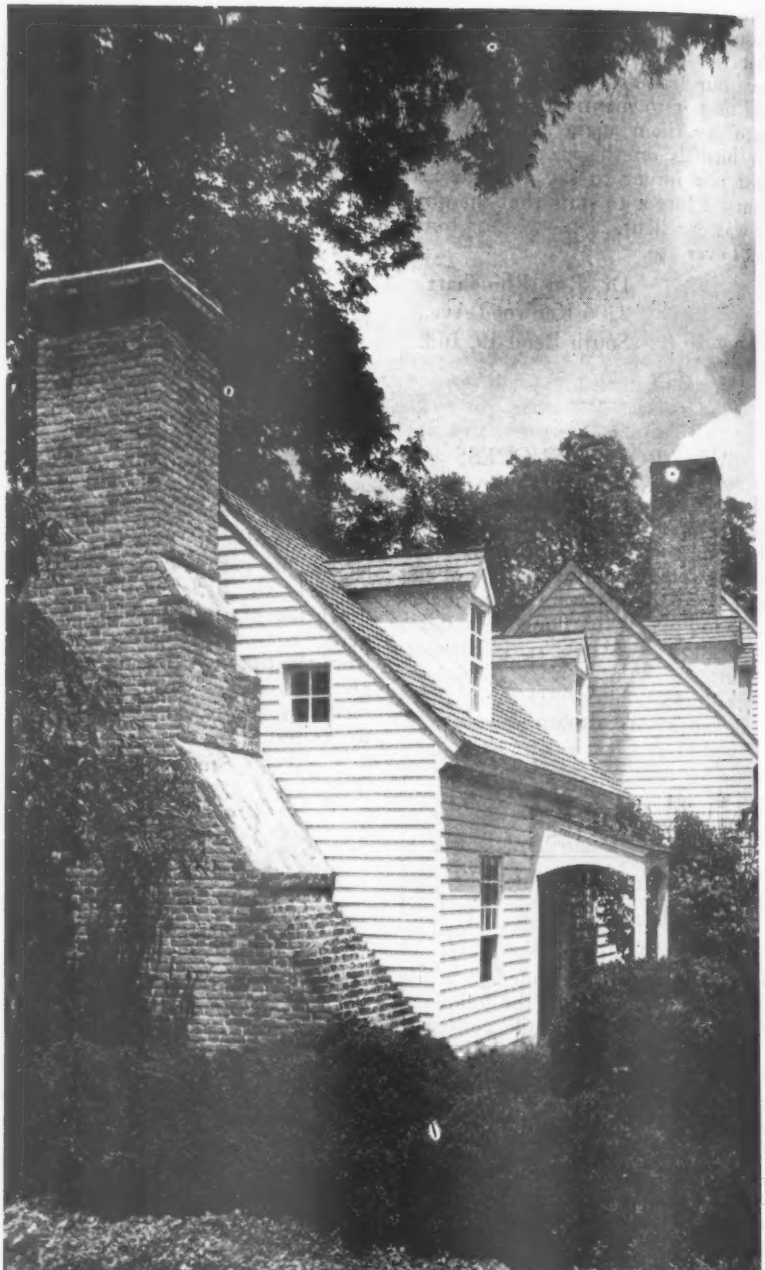
—o—

A GOOD START

I took a 5 months trial subscription and still have 2 more copies to come. I find it very interesting and full of many useful articles.

I broke ground last fall on 2½ acres of land that has been a cow pasture for about 45 years. In spite of a very dry summer and a number of other drawbacks I had the best garden in the neighborhood, and hope to continue to do so through organic gardening.

Thomas C. Mason
319 Pine Street
Green Bay, Wis.



Boxwood in Williamsburg, Va. Williamsburg Foundation

Boxwood cut into figures. McFarland

More About Boxwood

By J. HORACE McFARLAND

IN A recent article published in *Organic Gardening,* entitled "Broad-Leaved Evergreens," I touched slightly upon boxwood. I wish now to make that touch more effective, insisting that with this grand evergreen you can have what you want from four inches up to any number of feet if you express yourself definitely.

As a small boy in my mother's garden many, many years ago, I came to know a great, sprawling, neglected boxwood. There were peonies planted around it, and I suppose it was pretty good of its kind, though we did not undertake to propagate any boxwood edging such as most of us first considered as a worth while boxwood expression.

In the course of time I went to visit Mount Vernon, and there saw the great boxwoods presumed to be in some way responsible to the memory of George Washington. As I read more and more about his garden activities, I became more and more doubtful that he ever intended to grow those great boxwoods in what was, after all, a garden of flower beds. While the boxwood roots are not painfully pervasive,

Boxwood Hedge McFarland

❖

Decorative Boxwood McFarland

they do virtually smother out the natural inhabitants of garden beds. I insist, therefore, without any more authority than my own observation and preference, that it is a misuse of this grand evergreen to keep it growing on, and on, and on into great hedges which must be continually trimmed, and which never suggest anything else than devotion to boxwood.

I have never seen the contortions of the boxwood as practised in England, and possibly as shown in one of the photographs which may be used to illustrate this article. The fact that this evergreen is capable of being clipped and twisted to look like anything from a mouse to an elephant while still maintaining life, is not the fault of the plant. That it can be used with magnificent effect to build green enclosures by reason of its kindly endurance of the shears that clip it into odd shapes or fine shapes, the illustrations involved ought to show. One of them, for ex-

Boxwood in a Park. McFarland

ample, which shows a solid boxwood front, across a circle clipped in which one may see single beautiful specimens, is an excellent illustration of what may be done, with, by and to this member of the boxwood family.

Right with the same discussion comes the further fact that the boxwood plant can be grown pleasantly in a great vase, where if left to itself with but little attention it will make a picture of green beauty. Its further facility to make a great mass of greenery which can give dignity to otherwise inadequate surroundings is abundantly shown, and if the poor boxwood is left alone it can grow as in one case in a picture we have it has grown into natural variations from the smooth outline that in this 120-year-old specimen are quite agreeable.

But to my mind the utility of the boxwood is its enclosed finish to garden beds, whether they be of roses, peonies, or what not. It is like the

Possibilities? McFarland

Behind Nancy Camp House — Williamsburg Foundation

Boxwood Garden of the Governor's Palace. Williamsburg Foundation

frosting on the cake when so used, and it is astonishingly easy to have under such surroundings.

I have not touched upon the botany of the boxwood, but I think I can now discharge that not unpleasant duty by saying that it is *Buxus sempervirens,* and that a very large percentage of all one sees either in trimmed and tortured specimens, in excellent single plants grown in pots or vases, in hedges carefully trimmed, or in almost any other way, are nevertheless still botanically *Buxus sempervirens,* the common box. There are very many variations of this seemingly eternal plant, and you can do with it what you like if your fingers are sufficiently "green." It is not necessary to pay any attention to the so-called *Suffruticosa* variety, for after all the variations are all about, and a cutting from any one of them will grow a boxwood plant or tree. I may say right here that my own experience is that it is wise to make more than a common cutting. If you can secure trimmings from a growing boxwood tree, they can be three inches or more in height and with reasonable propagating skill they can be readily rooted, whereupon you start your hedge with your cutting, the future being dependent entirely upon what you want to do about it.

There is another variety, called *B. japonica,* of which I have at Breeze Hill several enjoyable examples that have been encouraged to mark the central walk leading to the lily pool. The leaves of this boxwood are just a little lighter, and tend to have an agreeable yellowish hue which contrasts with the deep green of the common box and which in my experience has been completely hardy.

When this question of hardiness comes up it must be admitted that some bitter cold winter will bite into the buxus and do some trimming, not with shears but with chill. That is one

Box edging in Rose Garden. McFarland

of the hazards of America, but it is a no greater hazard than any other to be expected.

It would not be fair to misunderstand my discussion of this grand broad-leaved evergreen by citing my dislike of over-grown, over-trimmed, unnatural fences, that you can do what you please with *Buxus sempervirens*. I do urge that it be considered as an object of great facility for real garden beauty and that it be so grown that your successor will not be tempted to the enormities which do not dignify Mount Vernon or any other of the great southern places where garden borders have been permitted to become rather unsightly hedges. I would not want to challenge the right of any gardener to do what he pleased with this facile plant, but I do want to set forward a sort of defense of George Washington and Thomas Jefferson in that they did not intend to have box enormities later to be dignified as having been of their culture.

Diet Changes In America

THE U. S. DEPARTMENT OF AGRICULTURE published statistics about changes in the nation's diet. Between 1909 and 1945 the consumption of citrus fruit rose 400 per cent. On the other hand, we now eat only 70 per cent of the potatoes and grain products that we thought necessary in 1909. The milk and vitamin consumption also increased steadily.

Mineral Relationships Between Soil and Plants

E. E. PFEIFFER, M. D.

To describe the relationship of plants to the minerals in the soil merely as a direct feeding process would be inadequate and perhaps even erroneous. Of course roots absorb minerals from the soil solution, and it is well known that plants require potassium, nitrogen salts, calcium salts, phosphates etc. Potatoes and beets need a lot of potassium, legumes need calcium, grains and cabbage require nitrogen. So we learned in school and our agricultural chemistry is more or less adjusted to the principle: "Give what it needs".

When considering the dogma of the purely chemical equivalent, this writer received his first shock when, shortly after he had left the University, he was asked to make a study of tobacco. Tobacco is evidently a potassium-eater, it wants a rich soil. It has also been observed that tobacco leaves rich in potassium salts burn better. The logical conclusion therefore was to try to improve the quality by increased applications of potassium fertilizer. Then, however, it was discovered (in Macedonian tobaccos) that the richest potassium leaf grew in a soil which is poor in potassium. When more potassium was added the leaves did not contain it, — the plant did not use the additional fertilizer. Careful investigation revealed that the best quality of tobacco grew where goat manure was used. (Goat manure was in use in these older days in Macedonia with the old-fashioned, peasant methods of production.) Curiously enough these leaves were rich in potassium although goat manure is poor in potassium, and yet of all the manures it is the one rich in magnesium. Evidently the tobacco plant needed magnesium in order to be able to make use of potassium. And there we open one of the most interesting, often paradoxical and exciting chapters of mineral and plant interrelationship, which up to the present has been but little investigated and understood: the chapter of selective and bio-catalytic properties.

What is a selective property? A plant does not take at random any salt which is fed to it in the soil but selects certain salts in certain quantities. Some plants take what they get, others do not. Many of our cultivated plants are weakened in this respect, while wild plants have frequently preserved their selective appetite. Perhaps we can compare this with the pig. It eats everything it gets, and will gain weight on garbage, distiller's mash, and such things. But if we want the prime Virginia ham of earlier times— our time has really lost the art of fine eating and can no longer distinguish— we will prefer ham from a pig which, at least in its youth, has pastured in oak woods and gotten some acorns. Nothing else can produce that tender, fine structure of the savoury meat of a Virginia ham. A plant with selective properties can demonstrate remarkable properties of survival, and can withstand inadequacies of soil and climate.

There is buckwheat, "poorest soil farmer's grain", which grows on sandy and acid soils and is very rich in calcium. Its value for green manuring lies in the fact that it collects calcium. If you give it a lot of lime you do not improve its intake of calcium. There are the oak trees which collect a lot of calcium and deposit it in their wood and bark, sometimes up to 66% of the ash content. The highest content of calcium is found in oak woods growing in sandy, calcium deficient soils, while in the Jurassic mountains (limestone) the calcium content of oak is much lower. We marvel at this paradoxical situation. Where does the calcium come from? Our clever chemists will

perhaps answer this some day. How does the reverse proportion come about, for instance, that on the poor soil grows the rich plant, rich in calcium, potassium, etc?

Here we can observe a peculiar manifestation of the life process itself, which is an active property (compared with the pig in the woods and not with that on the garbage pile). An entirely new, thus far neglected, field opens for biological research: the study of the biological selective relationship of plant and soil. Plants likewise produce their own types of humus. They also create typical and characteristic mineral situations in the soil. The humus around an oak tree is entirely different from that of a birch or a spruce. The oak collects calcium to an extent of which no other tree is capable. When the leaves and decaying bark return to the soil they form an important supply of that element which stimulates earthworm activity, and all kinds of seedlings will grow there. We cannot say that the oak tree depletes the soil of calcium for its roots grow very deep into layers which otherwise would never be accessible to plant life (they have been found penetrating caves 150 feet beneath the surface).

In other cases we find depleting effects but in a favorable sense. There is the iron-decreasing effect of the nettles. These plants collect iron to an extent of which very few other plants are capable. Iron is very important to plant life for its "presence" enables the plant to produce its biocatalyst, the transformer of light into chemical energy, namely chlorophyll. Chlorophyll itself contains magnesium but no iron. It is, however, not manufactured by the plant unless iron is present. Not much is needed, only a concentration of one to one hundred thousand is necessary. Too much iron in the soil has a destructive effect which marches hand in hand with acidity, stagnant moisture and a gradual obstruction of the porous structure of the soil. The formation of a hard pan of bog iron ore underneath the surface of old, wet and low pastures is a well known and feared phenomenon caused by the oxidation and calcification of iron. Once this process has started it will continue, the pasture will gradually die out and turn into worthless land unless expensive measures are taken. Only Hermann Goering could still find a value in these deposits when he suggested in 1938 that they be mined and farmers in Eastern Germany got more for their iron deposits than for their farm produce.

If this oxidation and calcification of iron has only just begun, the stinging nettle and others absorb iron, sweeten the soil with their humus and counteract the damaging process. Of course, we may not be able or not want to grow a crop of nettles, but we may marvel at nature's self help. We may now look upon nettles along the roadside, in a ditch or around (not *on*) a compost heap with understanding, instead of disgust. We know now why they grow there.

Another interesting relationship between soil minerals and plants is shown by the fact that certain minerals are absolutely essential to the development of starch and protein though they do not enter the molecular formulae of starches, sugars or proteins. For instance, starch is produced in direct relationship to the availability of potassium. Only soils rich in potassium will produce good potatoes, corn or grain. But in the very cells of the plants where starch is produced the potassium disappears and starch and sugar, of course, do not contain potassium. The potassium acts as a biocatalyst, directing and influencing the upbuilding process in plant tissues up to the moment when starch and sugar are deposited. This process is usually completed when the fruit or seeds begin to form or when the leaves of the trees turn multicolored in the Fall. Young leaves are richer in potassium than older leaves. If we want to improve the potassium content of the soil we should, therefore, use green manure crops or compost

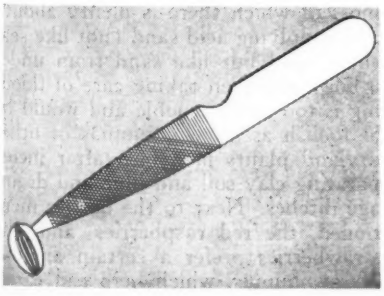
made from mowing down and composting green crops such as mustard, legumes, vetch, rye, etc. One of the important features of using garbage, leaf and weed compost is that it is rich in potassium as is all decaying plant material.

Phosphates stimulate the processes of protein formation and cell division. They develop toward the maturing period of the plant. Certain seed proteins, in the germ, contain a high amount of phosphorus. However, the roots of germinating seeds are very sensitive to phosphates of which they can use only the most minute quantities.

Still many seeds are formed on soils which are poor in phosphates. How is this possible? In such cases the effect of the phosphates is taken over by silicates. Wild plants, in particular, can make use of silicates with the same results as many cultivated plants can only obtain from the presence of phosphates. Our cultivating has spoiled some of the selective substituting qualities of natural growth. This is what we pay for in alienating plants from their natural habitat and breeding them for higher production. It may well be that future biologists will pay more attention to these as yet little known properties and breed plants with stronger "substituting" properties in order to overcome deficiencies in the soil. Until such time the use of natural resources, like rock phosphate and bone meal or oyster shells will help to bridge over a phosphate deficiency. If we want good seeds from garden crops we should make sure that our compost contains phosphates.

Silicates, which are abundant in most soils, play another important role. The silica content may not be great in muck land, fine silt loam and loess soils. In the plant, silicates migrate to the cell walls, the epidermis. Cell walls and epidermis rich in silicates are more resistant to fungus diseases and parasites. In oats and barley, silicates reinforce the action of phosphates. Experiments have shown that one part of phosphates plus one part or even less of silicates has produced as much growth as three parts of phosphates alone (one reason why we like to interlayer a compost heap or even a manure heap with thin layers of earth). It has been observed that plants which grow in a soil rich in silicates but poor in humus contain less silicate (SiO^2). In other words: the presence of humus increases the beneficial effect of the silicates, which in turn increase the effect of the phosphates. Again we see that humus is the basis of all life, even of the mineral exchanges between soil and plants.

Various Devices



Mr. Peter Sievers of New Holstein, Wisconsin writes:

I have been trying different ways of opening sunflower seeds. This week I found another way which works better than any one I know.

As illustrated—hold the seed between thumb and first finger, with the other hand work the point of a five inch nail file through the seed just above the outer edge at about right angle. With a little practice you will break the outer shell in halves.

At the same time you can also pick out the seeds that have apparently a big kernel, these can be retained for planting and thus improve your crops.

Acid-Loving and Lime-Loving Plants

By HEINRICH MEYER

THE general garden literature abounds with references to soil preferences of vegetables and flowers so that many beginners consider the problem of soil acidity a difficult question. Let us therefore say from the outset that millions of gardeners have successfully gardened for thousands of years without the slightest knowledge of soil chemistry and that the oft bespoken green thumb can easily be acquired in this line if only we watch nature. Where does a plant originally come from? When we know where it grows naturally we can take care of all its garden requirements as well.

To begin with, there are plants that grow in the woods—wildflowers, flowering shrubs, bulbous plants; there are others that grow on the sunny plains. In the woods, leaves drop to the ground and shade is provided for long periods of the year. Raw humus collects. In the prairies or wherever else the sun beats down on a treeless land, humus may form from sod and herbs that break up, but the wind blows in dust and the warm air takes care that the humus layer becomes not too thick. What made a woods grow in one region, what made prairies form elsewhere? Soil conditions have much to do with it, but moisture coming down as snow and rain determines even more. Beyond a certain degree of rainfall, trees will not survive, though grasses and other low growing plants may well find enough to build up their slenderer bodies. Roughly speaking, we can say that plants that grow in woods, where raw humus collects, where moisture is ample and where shade or half-shade is not missing, and where therefore the soil remains more acid, are plants that, when moved to the garden, must also be provided with an acid medium of raw humus. On the other hand, plants that thrive in the plains and in the sun and wherever dry conditions predominate, on the soil which originally was washed down from the mountains and has formed sediments, such as limestone, plants which, in other words, are accustomed to alkaline conditions must be given lime in the garden and should not be mulched with leaf mold, peat moss or the like unless these have first been composted with additions of lime.

It is not necessary to have a soil test made for the average garden that receives regular manure or compost treatment; for the inclusion of organic matter will keep the soil acidity pretty stable. In fact, it would be best to relinquish the extraneous concept of acid-loving plants altogether in garden writing and to speak of plants that require raw humus as against plants that demand lime.

Of the crop plants that are humus lovers, the whole family of *Ericaceae* stands out, especially all the blueberries and cranberries. It is useless trying to grow them outside their territory, for not only do they need raw humus, but also plenty of moisture at certain times. To build up a suitable growing medium for them by importing acid peat moss (not alkaline peat moss of which there is plenty about) and supplying acid sand (not like seashore sand but like sand from under a bog) and then taking care of flooding is too much trouble and would be as foolish as growing zinnias or other dryland plants in a bog, after incorporating clay soil and lime and drainage ditches. Next to the berries mentioned, the red raspberries and the strawberries prefer a certain amount of raw humus, which here can easily

be supplied through mulches. Rhubarb and the vine crops (cucumbers, pumpkins) love humus and will, the only crops of this type, succeed even in pure compost.

The azaleas, rhododendrons, ericas, camellias, and practically all the broad-leaf evergreens as well as the pines, spruces, hemlocks and other trees with needles are, as we can readily determine, plants of the woods which normally spring up where there is debris from previous growth. These then want humus again, whether you plant them around the house or in a large landscaping project. It is best to put leaf mold and acid peat moss in the planting holes of azaleas, rhododendrons and camellias and to mulch them on top likewise; a mulch is usually beneficial and usually enough for the other evergreens.

Can one not produce acidity chemically? Yes, there are various means of achieving this by drenching the soil with sulphates; but ask yourself who does this in the woods where azaleas thrive? To ask the question is the same as giving the answer. The plants are not accustomed to aluminum sulphate and will not stand up under such treatment for long; many complaints have already come from gardeners who wanted to take the chemical shortcut, because they learned that their expensive shrubs and trees did not respond very favorably after a few years. Let us not forget that the addition of a chemical to the soil produces many changes in soil structure, bacterial activity, and feeding of plant roots. Evergreens do not want much nitrogen and they are rather hardy if they can forage for the small requirements that boggy land allows them; they do not want heavy fertilizing with manure and they cannot stand acidity that is not produced by decaying plant matter and soggy soil conditions. If maltreated chemically they lose their strength and cease flowering or fall victim to diseases.

Which other plants are similar to these wood shrubs? Obviously, wintergreen, Solomon's Seal, Woodruff, Arbutus, orchids, Trillium, most ferns, some of the irises and wood anemones, and the majority of the lilies. All of these like more or less decayed leaf or wood mould. Some want water at their feet, others demand good drainage. When in doubt, give them compost made without lime and provide for drainage by not planting them in a hole but on a raised bed. And be sure to take care of the shade aspect at the same time, by planting them on the East side of a hedge or shrub border so that the midday sun is not upon them.

Of the house plants, fuchsia, begonia and epiphyllum are the three foremost lovers of humus, which can best be supplied by making leaf mold and adding peat moss to garden soil, compost or rotted manure. While rotted manure may not be rich enough in nitrogen to feed the bacteria for breaking down a compost heap, it is often just right for shrubs and flowers.

The matter seems to become a bit more complicated when we look for lime requirements. Most lilies, for example, seem to want a certain amount of lime in the soil while the azaleas do without it. We therefore have plants that are both humus lovers and lime lovers like the cucumbers, hepaticas and crocus, some that require just a little bit of lime, like the lilies; some that do without humus. In practice this is not half so serious. Take a lily-of-the-valley, it thrives in soil that has little lime and it thrives in soil that has ample supplies, provided there is enough humus, shade and moisture. The organic matter provides for balance. It takes the risk out of the problem. Monkshood, pansy, most roses, the columbines, primroses, delphiniums, and uncounted other garden plants—including all vegetables—will succeed if there is enough organic matter in the soil and if lime is not totally absent. The sprinkling given to compost heaps is adequate for their needs and where eggshells and other leftover wastes are employed or where bone meal is added, the balance is equally good. This takes care of to-

matoes and peppers, squash and pole beans. One more pointer. Always think of this: The faster a plant grows the more nutrients it must have available. The summer vegetables, the warm weather crops, especially those that go out last, like the tomatoes, cucumbers, melons, pumpkins, want a rich soil. Biennials or perennials, from which no crop is taken, for instance the flowers in a perennial border, need less plant food. Thus you make heavier applications of compost in the vegetable or annual garden than in the perennial border.

Now to plants which demand considerable amounts of lime. Practically all the composites, such as asters, zinnias, calendula, coreopsis; almost each member of the crucifers, such as candytuft, wallflower, stock, radish, mignonette, cauliflower, cabbage, kohlrabi; practically all legumes, such as pea, bean, sweet pea, lupine; and the bulbous plants that bloom in summer, such as gladiolus, want or can stand lime in ample amounts. Most rock garden plants, the portulacas, poppies, the flowering members of the potato family, such as schizanthus, petunia, salpiglossis, and the large number of pinks, carnations, Sweet Williams need lime too. As to spring-flowering bulbs (tulips, daffodils, hyacinths) the range is wide, but bone meal and lime is acceptable to them; leaf mold and half shade will protect them and prolong their flowering.

Some of the lime lovers do not want humus and will thrive less when compost is used abundantly. Take a gladiolus that originally may have formed its habits in Southern Africa where the sun burned out all humus! It had no chance to absorb nutrients from organic soil; it does not as a result demand it in the garden. On the other hand, it had ample supplies of phosphorus and will therefore respond to bone meal and phosphate rock. Peonies do not seem to require much humus, daylilies thrive with or without it, the irises do not want to be mulched, but like the sun to strike their rhizomes, the chrysanthemums do not want heavy compost feeding, but require some lime; and the majority of the herbs or plants with fragrant leaves, other than Woodruff, are also lime lovers rather than humus lovers. They grow on rocky, dry, sunny ledges and have therefore not acquired the compost custom of nutrition.

It would not be difficult to copy long lists from the research work of scientists as to acidity preferences of garden plants, but not much is gained by this, since we usually cannot control our soils and at the same time change our climate. We can provide shade for shade lovers, we can provide humus to balance soil extremes and to supply organic food, we can supply mulches and add leaves so that the raw humus feeders find an acceptable medium; but we cannot possibly produce an optimum acidity for more than a short month whatever we may try outside the laboratory. One good rain or one season of dry weather does away with all chemical planning. The organic plan does away with this problem.

This is fortunate, because plants are not so strict as some lists would make us fear; if they were so strict very few people would have succeeded in growing them, and they would never have become universal garden plants. If you want to go into azalea or camellia raising or mean to produce gladiolus commercially, you will not change your soil, but move to a region which has soil and climate for your enterprise. To find out about this, you can always approach your State Experiment Station, which is usually located at the Agricultural State college; the Department of Soils will make a soil analysis if you send them about half a pound. But they can, of course, not do it five or six times throughout a year and ascertain in detail what will happen after long rains or prolonged seasons of dry weather. You need no more bother them than I should for you can see what your neighbors grow and what you yourself grow. If a plant doesn't succeed, why grow it? There

are others that will do well. For the average garden, compost is the answer because it produces a balance and buffers extremes. For unusual enterprises, you must experiment on your own. Look up where the plant originally grew and what conditions it faced there; with that principle in mind you can determine whether it is a wood or a plains plant, whether it wants raw humus and shade or humus and lime or lime without humus. Let the plants tell you, not the laboratories. The acidity question is interesting, but it has much more scientific than practical interest. The scientists are by no means certain as to details and plant physiology is as yet a very young discipline; but gardening is as old as the plains and, possibly, started already in the woods.

The plants that originated on the seashore are alkali lovers that want a certain amount of soda or salt in the soil; they are the only ones which respond to wash water containing soap, though of course not to water with non-soapy detergents. Asparagus, beets, and spinach are in question, and it is therefore an old practice to sprinkle some salt on asparagus beds. Nevertheless, moderation is necessary and you cannot use so much salt that you destroy the weeds by it. For that purpose, hoeing and hand weeding is necessary. It is strange therefore to observe that the best asparagus, which is juicy and cut below ground before it gets green, as well as the tenderest spinach can be grown with compost and abundance of organic matter in the soil. The beets are the exception, they grow anywhere, provided the soil is alkaline enough.

For all other garden vegetables a soil on the slightly acid side is preferable, and the inclusion of humus material made with phosphate rock and lime is therefore standard for tomatoes, peppers, onions, carrots, parsley, leek, corn, lettuce, endive, parsnips, etc. Only celery and celeriac make special demands on humus of a more acid nature, the same kind that would suit all berries. It may be wise to provide for this requirement by making a pile of compost without lime.

You Can Help The Organic Cause

You can help by handing out our subscription-getting booklets to gardeners in your community. Even neighbors, co-workers, fellow members in your church, clubs and organizations are prospects. They will thank you for giving them this booklet, for it may be the means of converting them into successful, organic gardeners. It will show them that fertile soil is the foundation of healthy crops, healthy live-stock and healthy human beings. It points out the folly and dangers of using chemical fertilizers.

You don't have to give a sales talk or make a follow-up, for the booklet in itself will induce them to subscribe. Through a coded coupon we can trace each subscription to your efforts. For this easy, spare-time activity you will receive a liberal commission.

During the past 8 months, reader-subscribers who have handed these booklets out among their friends were directly responsible for adding 1,551 new subscribers to our mailing list.

- **Send For Your FREE Booklets**

Write to Organic Gardening, Dept. Q., Emmaus, Pa. We will be glad to send you 25 or 50 booklets. State the amount you want.

by H. K. MEYER

Over the Fence

NITROGEN LOSSES occur in alkaline soils when they are dried out, Madhok and Uddin report in *Soil Science*, 61 (1946) 275. This would indicate that any method of increasing the water-retentiveness of dryland soils, such as is achieved by incorporating organics, would automatically save the nitrogen while at the same time changing the alkalinity to neutrality or slight acidity. America has solved bigger problems than supplying desert land with organics. After all, even the Sahara was once fertile and the Italian colonists restored this fertility as quickly as the Mormons did in Utah by producing luscious growth of gardens. Only recently, the South African *Farmers Journal* upheld the Italian colonists of North Africa as a model to the soil exploiters of South Africa.

—o—

PHOSPHATE ROCK has often been discredited here and there, though many experiments have shown that it is superior to other phosphate fertilizers when used in conjunction with manure. It used to be claimed by experimenters intent on having us use superphosphate (an artificial fertilizer) that rock phosphate was not soluble in certain soils. This may be so if the rock is strewn on without organic matter. But lo and behold, now comes the prominent Beltsville Station with a report, issuing from Dr. Stuart, plant physiologist, which shows that the solubility of phosphate rock is not so bad. *Science News Letter* reports on November 30, 1946 as follows: "Another money-saving discovery is the use of ground-up crude phosphate rock instead of gravel as the soil-less gardening 'soil'. The plants get as much phosphorus as they need, without the necessity of adding costly phosphates to the nutrient solution." If this is true of water culture experiments it would seem to be at least as applicable in the acid soil regions of the Northeast and the Southeast, where the costly super and triple phosphates are so widely used upon recommendation by the same group of scientists who find the same phosphate costly in culture solution.

—o—

FALLOWING has many aspects. If nothing is grown on the land, nothing is added. In fact, twenty-five years of research in Utah, reported by Greaves and Bracken in *Soil Science* 62 (1946) 355, show that continued cropping may keep the soils in better shape than fallowing methods. It was found that a rotation of peas and wheat was excellent; the soil lost no nitrogen at all, whereas in continual cropping with wheat the soil lost much more nitrogen than was carried off in the crops. Even if between the wheat crops, fallowing was practised, the results were unsatisfactory. In regions like Eastern Pennsylvania where ample moisture produces an ample growth of organic material the results of fallowing are naturally quite different since a fallow allows the farmer to replenish the organic matter content of the soil by plowing under the weed growth after it has served as a cover crop.

—o—

AVAILABILITY has always been the watchword of the fertilizer people and the decisive factor in fertilizer laws, made in days when modern soil chemistry was at its very beginning. More recently though a patent has been granted to two inventors, Rohner

of Syracuse and Wood of Geddes, New York to coat fertilizer with a water-insoluble resin so that the nitrogen would become less easily washed away. This fact, reported by *Science News Letter*, February 22, 1947, reminds me of the report by R. R. Williams before the American Bureau for Medical Aid to China, abstracted in *Biologia* 1(1947)10; this gentleman worked out arrangements for the use of rice enriched with vitamin B^1, niacin and iron among 100,000 factory workers in Shanghai. It would seem simpler to feed them whole rice to begin with. Why make fertilizers soluble and then treat them with a resin to cut down solubility; why shell rice and then enrich it?

—o—

AFTER YOUR TULIPS, daffodils and other bulbs have stopped blooming, be sure to let them grow. By cutting off their leaves you prevent them from gathering new nutrients for next year's flowering. Sow some annuals between them. I used Clarkia last year and after it had died down, sowed corn salad, from which we had fresh greens up till Christmas and again early this spring. After all, nature does not distinguish between flowers and salad vegetables. They are all plants and the corn salad rosettes are very pretty ones, too.

—o—

GYPSUM has always been rejected by *Organic Gardening* and lime has been recommended in its stead. Freed and Peech of Cornell University recently reported in *Journal of the American Society of Agronomy* 38(1946) 614 that barley, perennial ryegrass and alfalfa absorbed more calcium and made better growth on limed soils than on soils with gypsum, even if the gypsum-treated soils had a higher calcium content. The reason is that gypsum changes soil acidity unfavorably and that lime makes some soil minerals less available. 1 part of manganese in 10,000 parts of soil—1 pound in 10,000 pounds—makes the land already unsuitable for alfalfa; by cutting down soil acidity with lime, part of this manganese is sowed up. There are other such factors involved which show at least that the addition of anything to the soil produces changes that may get entirely out of control, but that lime is safe while gypsum can ruin all prospects. This also shows that testing soils for calcium alone means very little, because the absolute amount of a substance in the soil has little bearing on its fertility.

—o—

AFRICA A DYING COUNTRY is the title of a book by J. P. Harroy, which according to *Medical Times* (74:11) attributes the ever-decreasing productivity of tropical Africa to the absence of lime from the soils in the Congo region. Imported cows soon cease to yield milk in quantity. Dr. Dumont of Brussels, Belgium, reports there also that calcium deficiency in other parts of the world, for instance, the Philippine Islands cuts down on health, disease resistance, and vigor and increases heart diseases.

—o—

DISEASE AND FERTILIZER connections have been ascertained frequently. To judge from some research at the Department of Agriculture with bean virus diseases, published by Hedges and Fisher in *Phytopathology* 36(1946) 589 ff, low and high nitrogen feeding produced less disease than a medium diet. Nitrogen affects so many different aspects of plant growth that reasons cannot be assigned to results. Take for example hemp or flax; if they are too heavily fed on nitrogen, they will make a juicy growth, but have fibers of less strength than the plants grown on somewhat poorer soil. It has likewise been observed that potatoes grown with oversupply of nitrogen store less satisfactorily especially if the season was wet. All of this shows that dieting plants artificially is not only sometimes dangerous, but also hopeless, whereas a balanced plant food, such as compost made with phosphate rock or bone meal, offers the soundest prospects.

Kale Blossoms **Clewell**

Chives in Bloom — Clewell

The Beauty of Vegetable Flowers

AT A time when stock and wallflowers are not yet ready to gratify the gardener with their four-petalled flowers, one of their hardy relatives, the garden *Kale* displays for weeks its rich yellow spikes visited by wild bees and other early honey gatherers. At the same time you find the purplish lavender lily flowers of the *Chives,* which are not at all bad for a border in front of a spinach bed. On the dry bank of the garden the biennial lace flowers of *Caraway* offer a profusion of white beauty, soon to be followed by their aromatic fruit, the caraway seeds. *Salsify,* too, blossoms then, opening its perfect violet flowers in the morning and closing them as the sun comes up, but keeping in bloom longer on overcast days. The next day you can observe the same play of natural movement until finally puffs of silk appear on which the seeds are carried away unless you pick them in time. The delicate *Burnet* with its graceful fernlike leaves and its odd flowers, from which the yellow pollen-bearers hang, will spread in a sunny or shady spot as a perfect ground cover and foliage plant, but cease blooming before any of the others.

There are many other herbs and vegetables that are decorative in their own right and the artistic garden planner will know how to use *Celeriac* and *Parsnip, Chard* and *Beets, Safflower* and *Cress,* and especially *Rocket,* sometimes sold as Arugala, for their leaf or flower beauties. The latter is said to be useful as a salad vegetable;

The delicate Burnet

Clewell

The beautiful Salsify

Clewell

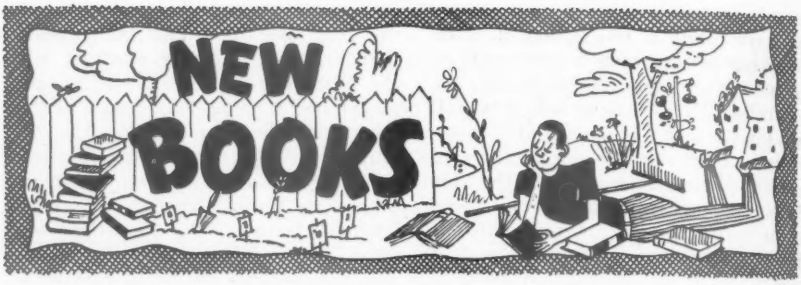
we have found it too strong of taste, but keep on strewing a few seeds around because the veined flowers are beautiful. By the same token we always have some *Borage,* loved by bees, profuse of growth and one of the rare garden plants abounding with blue flowers in unceasing succession. Some of the herbs are very attractive also as flowering plants. The most perfect beauty, both as to leaves and shape of blossom, is to my mind the *Rue,* easily grown from seed and hardy through the cold months. The pale yellow flower makes a gentle contrast with the blueish green leaves. Of the more useful herbs, *Peppermint and Savory* are outstanding for leaf coloring, fragrance and flowering. The observing gardener could, no doubt, add many others to those mentioned, but the lover of nature will especially come away with one thought: Usefulness and beauty need not be at war.

MEYER

Caraway flowering — Clewell

Parsley Chases Bugs

"A FEW PARSLEY PLANTS grown among rose bushes keep away rose beetles. I have tried this for two seasons and, surprisingly enough, I have found that it works," writes L. F. Bachrach of Newton, Mass. in January 1, 1947 *Horticulture Illustrated.*



Please do not order these books from us.
Order through a book dealer or directly from the publisher.

Dorothy H. Jenkins, AROUND THE GARDEN (M. Barrows and Co., Inc., 114 East 32, New York 16, N. Y. $2.50)

There has long been a need for a gardener's calendar that would be readable and suggestive to amateur and expert alike. The Garden Editor of the New York Times has finally supplied such a book. I am constantly amazed at the freshness with which Miss Jenkins manages to present her information week after week. You have a wistaria vine? When are you to prune it? Read the book and sometime you will get the answer. You want your Poinsettias to bloom at Christmas? Sometime in September you'll get good advice. What is a tender lettuce for the warm summer months? You'll find the name in July. The problem of old chrysanthemums? In April you will learn how to take care of them. A wonderful book which we can recommend from all aspects. Splendid drawings of strawberry barrels and other interesting helps make the book even more practical.

Ernest Chabot, GREENHOUSE GARDENING FOR EVERYONE (M. Barrows and Co., 114 East 32, New York 16, N. Y. $3.00)

Many amateur gardeners who went into professional gardening had trouble finding practical information on growing plants under glass. There are some excellent books which are out of print and some new ones that are highly specialized, but there was none that everybody could use or adapt to his needs. Mr. Chabot has done gardeners, both amateurs and professionals, a real service. Every aspect is treated, whether it is shading or temperature or planting times. The latter question puzzles the beginner considerably; here he finds his answers. Highly recommended.

H. J. Lutz and R. F. Chandler, Jr. FOREST SOILS (John Wiley and Sons, Inc., 440 Fourth Ave., New York. $5.25)

This is one of those famous Wiley books that bring us most of the available knowledge on the subject in condensed form. Ample references to the writings of others allow the student to follow up matters of special importance at a nearby library. Soil-forming minerals, disintegration of rocks, forest soil organisms, the organic matter of forest soils are the headings of the first chapters and the following ones are equally interesting. This book agrees widely with the teachings of our magazine and takes care of many questions, such as mycorrhiza formation, the changeover from forest to agricultural use, the influence of soil minerals on plant growth, etc. A book for serious students of organiculture. Very highly recommended.

William C. Pryor, THE LAZY GARDENER (Longmans, Green and Co., 55 Fifth Avenue, New York City, $3.00).

Mr. Pryor is a wellknown author and one of the nicest men in the USDA. Sitting, as he does, in front of Hugh Bennett's door and being in charge of information on soil conservation matters he has to talk to hundreds of people, but he never seems to lose patience. Perhaps he recuperates at his home. He lives about nine miles out of Washington, in Falls Church, Va. He and his wife have their house and garden there. This book relates of his experiences with a garden in that latitude. We have had many garden books about the North, but none for that light-soil and hot-summer region which Mr. Pryor inhabits. Thus, his report should come in handy for those who'd like to know whether to leave their glads out during winter or to store them, whether to plant peas on St. Patrick's Day or on Good Friday. Mr. Pryor is for the latter date and I think he is wrong, because Good Friday is determined by Easter, and Easter is determined by the first full moon after the beginning of spring. Thus the date shifts within almost four weeks, while St. Patrick keeps his date. There are other matters about which one could argue with the author, but the book remains good and useful just the same; in fact, it becomes more useful because it is stimulating. Few garden books are readable, because most of them are not literature. Mr. Pryor's book is a good book quite apart from being a good garden book. Well recommended.

MEYER

Wild Flowers at Home

By WOODRUFF O. HOPKINS

MARCH winds and April showers do bring forth May flowers but long before May the lover of wild flowers can be on the wing. In fact, it will not be long now until the old haunts can be revisited and old flower friends seen in their favorite dells. Prepare now for that spring walk to the hidden spot where the bird's-foot violets grow, remember that moist, shady spot up the creek where the jack-in-the-pulpits thrive and plan now for that all-day trip in June to visit the mountains and see the rhododendron and the laurel.

As an added incentive this spring why not collect some of the smaller wild flowers for a covered bowl or terrarium? A large bowl with a piece of glass to cover it and keep in the moisture will make a pretty indoor garden. A more elaborate one can be made from six pieces of glass cut to make a small greenhouse, about 18 inches long and eight inches high. The panes are fastened together with narrow paper tape. The dark brown passe partout tape can be used to simulate the sections of a greenhouse and the dark wooden sides. Place the finished cover on a board and fit a galvanized pan an inch high inside.

Among the most popular of spring flowers are the violets, of course, and everyone who tramps the woods should have a collection of these beginning with the common purple violet. Then there is the early blue violet and the white violet. The yellow violet is an unusual one that comes along in late April or May. There are several varieties of these, the Downy yellow, the Smooth yellow and the Round leaved one. But all are an interesting reminder that every violet once was white or yellow just after turning from green. Only the more recently evolved violets are purple.

But the most popular is the hard-to-find birds-foot violet, named for its deeply cut leaves. It has a flower of pale, bluish-purple on the lower leaves and dark purple on the upper ones while its heart is of gold. It's beautiful pansy-like bloom is the most sought after violet. Look for it on shale, sandy soils and even on gravelly hillsides.

Of course, it must be remembered that these spring flowers will not bloom forever in the terrarium. That is why one should watch for the pretty little walking leaf. The walking leaf has a long narrow leaf that delights every newcomer with its peculiar habit of rooting at the end as soon as it touches the ground. From this another plant grows up and starts its walk.

The maidenhair fern is another little beauty with its fine, delicate leaf. It, too, is found in mossy, shady glens and usually is just the right size for an indoor garden. Not all wild flowers lend themselves to transplanting, however. Trailing arbutus, which is the No. 1 prize of wild flower lovers along the Appalachians from Maine to Florida, is one of these. It should never be uprooted.

But there is one more popular addition to the indoor garden which brightens it in the fall and lasts well into the winter, the partridge berry. This is of two varieties, one the wintergreenberry, a member of the heath family and the other the true partridge berry (*Mitchella repens*).

It is found in the fall under evergreen in the rich, acid soil. From the leaves of the wintergreen comes that

Jack-in-the-pulpit Clewell

old embrocation for "rheumatiz", wintergreen oil. Its flowers in the spring are small, white and are found alone. The true partridge or twin-berry also has a white flower with pink tips and grows on a vinelike plant with waxy leaves. It gets the name of twin-berry from the fact that the red berries often bulge out with two fat cheeks.

Many of the larger wild flowers that will not fit into the indoor garden soon find their way to our rock gardens. In fact, from them have been bred many of our modern garden flowers. But in bringing them from their wild home we can well remember to balance the books by returning some of their city cousins to their former wild estate. So

Dutchman's breeches Clewell

many of our packets of garden seed go to waste that might easily be strewn by the wayside just as Johnny Appleseed planted apple seeds along the roads of the middle west and added these trees to the country lanes for many years after he himself had passed on.

Violets, coreopsis, hardy poppies, corn-flowers, lark-spur and numerous other flowers need little encouragement to run wild and add their color to our countryside. All hardy perennials once grew wild in Europe or Asia or America so the wild-flower lover may easily plant as well as pick on his rambles.

The Star of Bethlehem is an exam-

ple of one of these flowers which already has escaped cultivation in the gardens from Massachusetts to Virginia. Once this plant was cultivated for its bulb in Italy where the people used it as food. From there it was brought to America and now is a delight for those folk who hike through the woods. The Star of Bethlehem was named by the Greeks for its supposed similarity to the star in the east that guided the wise men.

The blue or white flags or iris also are a fine addition to a garden of wild flowers. Not only are they the lovely prototype of our garden iris of many colors but they also have a long and honorable history. The white iris was the fleur-de-lys of chivalry. When young Louis VII, the pious crusader to the Holy Land, adopted this lily as the emblem of his house it undoubtedly then was called the fleur-de-Louis but since spelling was far from exact it soon was shortened to the present name. Eventually it became the flower of France. The name iris itself meant "rainbow" to the ancients.

Then there is the wild columbine with its five horns of plenty filled with nectar for the bees and butterflies as well as its rich red and yellow flower for the traveler. This plant was valued as early as the reign of Charles the First when it was transplanted from this country to the royal gardens at Hampton Court, England.

The wild, blue phlox is a flower so common that it has been civilized, gone wild and been cultivated again. It is common in the woods almost all over the country. Its cousin, the wild sweet william is another flower sought after by cultivators and is found in the moist, low woods of the middle and western states.

Remember, too, to look for the rue anemone, the wild aster, and all the bright-eyed daisies, lady's slipper, Solomon's seal and the trumpet flower. These are just a few of the many flowers that we sometimes call weeds and fail entirely to notice, although they add color and beauty to the countryside or wild garden. But with all the flowers that have been mentioned there is one group that has been overlooked intentionally. Dutchman's breeches is a discovery that will gladden the hearts of the younger fry because the flowers look like "something."

For the boys and girls there are all the berries to eat and the wild rose and dogwood for flowers. But no trip through the woods in spring is complete without a stop by a willow tree to make a willow whistle. Making willow whistles may not be part of wild-flower hunting but it is one of those things that lingers as a memory for years afterward to remind us of the times we once scampered through the woods with father.

To make one, you cut off a straight willow branch about three quarters of an inch round with as few buds on it as possible and with no branches on it for a length of six inches. This six inch piece also must be quite straight. Lay it on a smooth surface and tap all around it with the side or back of a jack knife. Tap it on all sides from end to end to soften the bark but not bruise it or cut it. How hard you must tap you can only learn from tapping.

At any rate, if you do it right the tube of bark will slip right off the wood as a smooth cylinder. To find out just how to cut the hole in the side of the tube and how to make the little wooden tongue, examine any wooden whistle. Finally, if you put the wood back in the tube, part way it will give off a tone when blown that will vary with how far it is inserted and be very satisfying to young ears. If the whistle dries out it will crack in a few hours so tell junior to put it in a glass of water until "tomorrow".

So, with a willow whistle, a sassafras root, some birds foot violets and some ferns and maybe a root of a wild rose you may homeward happily wend your way, filled with the enjoyment of rich hours spent close to Nature.

Dried Sewage Sludge In The Compost Heap

By PAUL A. UHLMANN

(Paul A. Uhlmann and Associates—Consulting Engineers)
Columbus, Ohio

IN the February issue of "Organic Gardening", Sir Albert Howard recommends the use of dried activated sludge and digested sewage sludge in the compost heap, as well as the recovery of power from methane gas and the recovery of valuable plant nutrients from the sewage treatment plant effluent.

Although the sewage treatment practice, pioneered in Europe, especially England, has made enormous strides in this country during the last fifteen years, the use of sewage sludge as fertilizer is still more or less a controversial issue, especially in larger cities, based mostly on economical and partly on psychological considerations.

The readers of "Organic Gardening" may be interested in a brief comment on the present status of sewage treatment in the U.S.A., and the types and methods of disposal of the sewage sludge developed in the process of treatment of domestic sewage and industrial wastes.

The type of sewage treatment varies with the size of the community, and the flow in the receiving stream into which the effluent from a sewage treatment plant is to be discharged.

Treatment Plants For Small Cities and Towns—For the complete treatment of domestic and industrial wastes of organic nature (canning, brewery, dairy wastes, etc.) in smaller communities, either sand filters or trickling filters have been more widely used in the past than the activated sludge process. In all of these plants, the heavy solids in the sewage are removed as sludge by plain settling. The sewage liquid minus these solids is oxidized, and therefore purified, by running it through the sand filters or trickling filters. In an activated sludge plant, the sewage liquid is oxidized by aeration, that is compressed air is thoroughly mixed with the sewage liquid whereby a chocolate brown sludge mixture is formed called activated sludge which is full of purifying aerobic bacteria. The aeration of the sewage is followed by final settling of the activated sludge which is partly returned to the incoming raw sewage and partly removed to the digestion tank. The purified sewage liquid is then discharged to the stream.

The previously settled out sewage solids or sludge are stored in so-called digesters (closed concrete tanks) for a period of forty to sixty days. During this digestion period, methane gas develops which in the past has been used for heating purposes of buildings and digester, and during the last decade in gas engines driving either air blowers or sewage pumps. In his design of small activated sludge plants, the author has successfully used small truck or automobile engines for the recovery of power from sludge gas during the past thirteen years in place of regular sludge gas engines which were not manufactured in the small sizes required.

Drying Methods of Sewage Sludge—After properly digested, the liquid sludge is conveyed from the digester to sand beds for air drying where the moisture content of the sludge is reduced from about 97% to approxi-

mately 50% or less, depending on the region. The sludge cake is forked from the sand beds and stock piled for future removal. Freezing of the stock pile results in pulverization of the sludge cake making it more usable for the average gardener.

The compost gardener will find this method of sludge drying in all sewage treatment plants serving a population of less than 30,000, although a few larger plants are also using sand filters.

Ordinarily, in larger plants, the sludge disposal is a major problem after the digested sludge has been mechanically dewatered on revolving vacuum filters. At the present time, a few large cities only are converting the sewage sludge into organic fertilizer due to the high cost of heat drying and marketing of the sludge in competition with commercial fertilizers. Most larger plants are incinerating the dewatered sludge, as it is apparently the least costly, although wasteful method of sludge disposal. Sometimes the incineration costs are saved by hauling the filter cake to the low lands as a fill.

In a recent report to the City of Columbus, Ohio, this author and his associates recommended the somewhat unique method of making about 15,000 tons of filter cake available in pulverized form for the use in compost heaps and on farms and city parks. As a solution of the hauling problem, it was recommended to have the sludge delivered to the property owner on a mile-ton basis, which method would save incineration cost and conserve a large amount of valuable plant food. What the decision of the City fathers will be, remains to be seen.

Suggestions to Organic Gardeners—Practically every superintendent of a sewage treatment plant will allow a gardener to haul all the sludge he can use. The air dried sludge cake or the filter cake makes excellent compost material.

Some plants have a sludge disintegrater to pulverize the sludge cakes, in which case the pulverized sludge cake can be mixed with the garden soil without any further preparation. Some people may object to the use of sludge on lawns and gardens because of a slight odor from the sometimes insufficiently digested sludge.

The compost gardener, however, can use the sludge cakes as they come from the sludge drying beds or sludge filters in his compost heaps. The small garden owner will not have any lack of compost material, as he can get all the sludge he desires—for the hauling.

In building his compost heap, he can use instead of water-waste activated sludge, an odorless liquid with a high nitrogen content (6% and more). This activated sludge is available, of course, only in sewage treatment plants using the activated sludge process.

The question has been raised as to whether or not industrial wastes in the sewage are harmful for plants. As a reasonably safe rule, it may be stated that if the sewage treatment plant uses a biological process for purification (sand filter, trickling filter, activated sludge) the sewage sludge can be considered harmless, because biological treatment is not possible if toxic industrial wastes are to be treated with domestic sewage. Furthermore, the superintendent of a plant usually knows the type of wastes treated in his plant and quite often has an analysis of the sewage sludge produced.

As previously mentioned, most sewage treatment plants are glad if they can get rid of the sludge or filter cakes without any expense. If the sludge would be offered in a pulverized form —which could be done by an inexpensive machine—the sludge would be more easily accepted. However, to the organic gardener the unpulverized sludge cake should be a welcome compost material which will be easily broken down with the other material of the compost heap.

At the present time, recovery of power from sludge gas is a recognized practice. The use of sewage sludge for fertilizer has not yet become general and popular. Many reasons for the

reluctance of the people to use the sewage sludge as an organic fertilizer are automatically eliminated if it is used in a compost heap instead of applying it directly to the soil.

Until conservation of soil and plant nutrients have been recognized as a necessity, enormous quantities of valuable plant food will be wasted in large cities where sewage sludge is incinerated as the cheapest and simplest method of sludge disposal.

I constructed a small everbearing strawberry bed with the use of leaves and rocks for mulching this fall. It is also where the water is handy. I am depending on it to thoroughly convert my husband to the idea of organic methods to the extent that he will be as interested in the work it entails as I am. He's a swell guy and I love him but he holds me down too much when I get good ideas like that—probably because I'm not too strong and he hasn't the time.

Name withheld.

•

Goofus—How did people first know an apple tree from a pear tree—by the bark?

Rufus—No, by the bite, silly.

•

Amateur Gardener: I have so much trouble telling the difference between my young plants and weeds. How do you tell which is which?

Old Hand: There is only one sure way: Pull them all out. If they come up again, they are weeds.

•

In Missouri there are trees so large, that it takes two men and a boy to look to the top of them. One looks till he gets tired, and another commences where he left off.

•

A READER WRITES

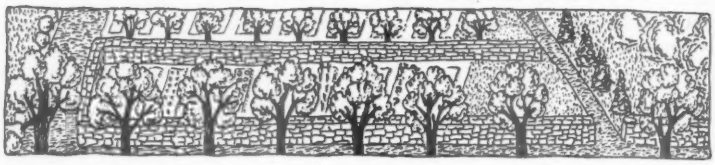
I made two compost heaps this fall and one is finished much to the surprise of my husband. He jokingly remarked to a neighbor that if he should find a cow missing he would know where to look for her.

•

SIMILAR TASTES

A gardening expert points out that slugs will not touch lettuces if the leaves are sprayed with a mixture of nicotine and soft soap. Neither will I.

John Hastings
The Daily Graphic



Garden Calendar --- May

Northern Region: In *Delaware*, for example, pole beans, bush limas, beets, cantaloupes, cucumbers, okra, summer squash, sweet corn, early tomato plants, watermelons are planted between May 5 and May 10. From May 10 to May 15, plant pole limas, carrots, eggplants, pepper plants, pumpkin, radish, sweet corn, sweet potatoes, canning tomatoes either as first or succession crops. Through the month, plant succession crops of snap bush beans, beets, sweet corn. In *Connecticut*, plant beans, Brussels sprouts, beets, early and midseason cabbage, carrots, cauliflower, late celery, chard, corn, cucumber, herbs, kohlrabi, leek, lettuce, muskmelons, onions, parsnips, parsley, late peas, potatoes, pumpkins, radishes, salsify, spinach, squash, turnips.

Plant summer-flowering *bulbs*, repot house plants that have finished blooming or are expected to bloom in late fall, divide primulas, sow summer annuals, especially, petunia, nicotiana, cosmos, zinnia, marigold, salpiglossis. Make second sowings of larkspur, root chrysanthemums, start perennial seedbeds.

Take geraniums and other houseplants out and either plant them in the open or plunge pots in ground. Also make cuttings of geraniums. If you sow geraniums in the open be sure to transplant them, otherwise you will get terrific taproots and find it impossible to transplant the flowers later into pots. If you sow dahlias now, give them warm soil and good spacing. Even the dwarf dahlias grow to considerable size and make tubers you can store during winter.

Water well occasionally, if need be, rather than in daily sprinklings that will not penetrate, but merely cake the soil.

Southern Region: The *tender vegetables*, such as okra, pumpkin, sweet potatoes, tomatoes, water melons, cantaloupes and peppers go out in the middle South; farther South, sow Spanish peanuts, soybeans, transplant eggplants and peppers.

The summer annuals go out, often in succession sowings for instance: Ageratum, zinnia, marigold, cosmos, portulaca, gaillardia. Feed gladiolus with compost, also roses; rake grass clippings and leaf mold around azaleas, hydrangeas, gardenias. Where saw dust is available, mix it with leaves or peat moss for mulching acid-loving plants. There are acid and non-acid peats, be sure to use only the former if you wish to grow plants from the woods that want acid raw humus.

Eat The Best When It Is At Its Best

By B. F. LUTMAN

Prof. Emeritus, University of Vermont

MOST of our education comes in little bits never learned in schools, from textbooks, or paid teachers. The fresh-faced young waiter in his tail coat who served dinner in a very modest, little hotel at the Hague in Holland did not know that he was giving me a lesson in eating when he set before me in mid-February, a delicious dish of young carrots and green peas. It was many years ago but the lesson was never forgotten. The little carrots, about the size of my little finger, were cooked whole with small, green peas. Where they came from at that season in Holland would be difficult to answer; they must have been imported from some sunnier country or have been grown under glass in that damp and cloudy land of Holland. But, to people accustomed during the winter to large, strong, carroty carrots from storage and to large, plump, tasteless peas out of a can, they were delicious.

The monthly reminders which you read from month to month in this magazine to grow crops and vegetables that are full-flavored and naturally nutritious, need an addition which is being made here from that long-ago experience in Holland. Every plant has a short period of growth when it is at its best in flavor and tender, cooking quality. The grower of his own fruits and vegetables can take advantage of this season and use them when they are at their best; the city buyer must depend on the vegetables he can find in his market or store.

The commercial vegetable grower seldom looks out for quality. He grows for quantity and appearance since his sales depend on vegetables that are large and fine-looking that he can sell for a low price. Only in markets that cater to those who are willing to spend a little more money for a little less but want the best and can afford to pay for it, will you find vegetables that are really A-1 in cooking quality. The whole tendency of the commercial grower is to keep his vegetables growing in the field or garden until they are too large since he sells by the bunch or by the pound and those which will make a fine appearance. The home grower of vegetables has the advantage; he can say himself when he wants to gather and eat although sometimes he waits too long to get the best. For, the best is very often not the largest.

You may have heard of the Pennsylvania Dutch farmer who sold all he could; what he could not sell, he fed to pigs and what the pigs would not eat, he ate himself. The story does not bother me in the least since my people were Pennsylvania Dutch and I know that they lived as well, or better, than any similar class in this country and they ate what they wanted when they wanted it. Of course some of the luxuries, such as bananas or oranges, were rather scarce but there was plenty of other good wholesome food.

But, the story has a moral. The grower is likely to sell the best and eat the worst. The large, nicely-shaped, and brilliantly colored fruits and vegetables are most salable while the small, misshapen, and drab-colored lots have to go for a lower price in the open market where appearance counts for so much.

One of the examples of mistaken buying because of appearances is the predominence in northern markets of the neat, red-skinned, small round po-

tatoes. They are known to seedsmen as "Biss' Triumph" or as the "strawberry" potato. They are low in yields and poor in quality but they sell because they look so tempting. A few years ago, I caught the clerk in my favorite market down on his knees before a basket of potatoes, moistening his thumb and then scrubbing some of the potatoes before he put them into a paper bag for a customer. To my inquiry whether the customers required their potatoes to be cleaned before they were sold he replied, "We aren't taking any chances on this red color on these early potatoes; we had a lot a few weeks ago, where we had complaints that the color came off when the potatoes were boiled. They had apparently been dipped in some dye to make them look like the strawberry potatoes. So, we look over every lot very carefully now before we sell them." So, you may see to what extent color sold the potatoes to those who did not know.

The general rule is that the market gets what the market demands and the consumer pays the price. He may get quality but again he may not; he may only get a fancy appearance.

To return to that early lesson on small carrots and small peas, just as good carrots and peas could be grown in the home garden as those eaten in Holland providing they were the right varieties and were picked or pulled at just the right stage of growth. The carrots from the home garden were just as sweet and fine flavored if they were brought in when they were still small, about the size of—or a little larger—than a pencil. If left until they were an inch or an inch and a half in diameter, they were tough and strong with that pronounced carroty taste that is good when not too pronounced. The variety did not seem to matter so much; any good variety would do although the preference is always given to the half-long types because they grow best on the quite shallow top soil of this particular garden.

The delicious, young green peas had two secrets, however. One, was to grow the wrinkled, or so-called sugar, varieties and the other was to gather them just as soon as the pods were swollen but still showed no signs of aging. Market gardeners are likely to have excellent varieties but wait to pick them until the pods themselves begin to turn a grayish green and no longer have the bright pea-green color. In this way he gets more pounds of peas but they are hard, plump, and tasteless.

Americans used to pay fancy prices in the days now past, for small cans of imported "petit pois." They were served at high class restaurants or at banquets only but the bright, green, little peas were nothing but small peas from France, with the pea green color made a darker green by a soak in alum, to make them tough and resistant to the canning process, followed by a bath in copper compounds to keep the color or to make it greener. Of course, their sale is now prohibited under the pure foods laws but we can have just as good peas from our own gardens if we pick them at the right stage in the growth of the pods.

Beans are another vegetable that are better when they are young; of course string beans are the sort to which reference is made. Here again, we were once able to buy canned whole "baby" beans carefully arranged in tin cans but at fancy prices. "Baby" beans are even better grown in your own garden and gathered fresh.

The round, green, pecil pod varieties of snap beans can be found in either early or late strains; Burbee's Stringless Greenpod for early and Refugee (also known as Thousand to One) for late. Any snap bean is better when gathered small and the real secret about having the best in beans is to keep the young beans picked off when they are about 3 to 4 inches long. Either of these varieties are stringless and tender even when full grown but they are even tenderer when picked very young. No special directions are necessary for the cooking of baby beans; just boil them for fifteen to

twenty minutes in salted water; drain, and serve.

Summer squash are also best when quite small and young; the flavor and tenderness both disappear with the size and age. As with most gardeners, the writer has always grown and eaten the yellow crooknecks but last summer, partly through the mistaken efforts of our neighbor's cat in digging in his squash hills, necessitating replanting a number of them, two Italian varieties: zucchini and cocozell were substituted. They were a delightful surprise and if you have never grown them, try them. Cook them just as you would the crooknecks by slicing in thin slices, and boiling in salted water. Drain and serve. Or, they may be sliced like egg plant; rolled in batter, and fried in fat. The Italians are very fond of them cooked in the latter style. They are more trouble to prepare but they are delicious. These squash should be used when they are about 8 to 10 inches long; they are still good when a little older but the seeds begin to be noticeable in the larger ones.

The only way to get first class sweet corn ears is to grow them yourself and harvest them when they are at just the right stage of growth. You cannot buy them in the market because the market gardener cannot get them in to your dealer in time. For green corn ears have to be gathered not only at the right stage of growth but also at the right time of day.

Sweetness, or lack of sweetness, in corn depends on the amount of sugar in the grains. The corn plant makes its sugars in the leaves and conveys them to the growing ears in solution in the sap. The corn plant stores its reserves for the young plants in the ears in the form of starch. The sugars are made, of course, during the daylight hours and are transferred at night to the ears to be converted there into starch. The trick is to catch the plant while it is making the transfer and before it has been able to convert it into starch.

The corn grains on very young ears are little tasteless sacks of water. As the plant gathers more reserve food, it fills out the grain with sugar and then with starch. The contents of the grains now become milky from the starch grains. If a grain is broken by the thumb nail, this thick, milky juice flows out; as the grower would say, the corn is now "in the milk". The ears now are just right for eating.

But the time of day has much to do with the sweetness. The conversion of the sugars into starch occurs during the night and the early morning hours so that corn grains are at their sweetest in the late evening or early morning although some sugar is always present in them.

Sweet corn is a rather modern selection and development from the old field or Indian corn varieties. Many older readers will recall, especially if they come from the middle west, that the "roasting ears" were nothing but young ears selected from the ordinary field corn. The farmer or his wife went out into the corn field picked out some likely young, small ears; shucked them at once; and popped them at once into the pot of boiling water. Maybe my appetite was better then but in my recollections, those field corn ears were delicious. But perhaps it was because they were carefully chosen and had been gathered at the right time of day. Also, of course, that they had been cooked at once and not allowed to lie around some grocer's window for a day or two before they were bought and used.

Potatoes have been my work for nearly forty years and I ought to know something about eating them too. One of our large growers of seed potatoes —he raised over 10,000 bushels of Irish Cobblers every year—told me many years ago that the only time a potato tasted good to him was when they were just about half grown. When they were boiled "with their jackets on"; the skin burst, and the mealy contents came rolling out that they were food fit for a king, especially with a liberal addition of salt and butter.

They are certainly a super-vegetable cooked in this way and at this stage but for a change, they are still better if taken when quite a little smaller. Out in the mid-west, we used to "gravel" them. Now, I never saw that word "gravel" in print nor in any dictionary but my Century Dictionary says that there is such a word as "grabble" which is derived from the Dutch or Low German and means, "To grope about; to feel with the hands; make tentative grasps or clutches." But our soil was full of small stones which we called gravel, so the word, "grabble" was twisted into gravel since you were as likely to find as many pieces of gravel as you were small potatoes if you went looking for them.

The young potatoes are formed just about the time the plants blossom, so a few weeks after the blossoms have dropped, we used to dig cautiously, so as not to injure the main stalk, alongside the larger and stouter plants to find the small tubers. They could be sometimes spotted by cracks in the soil near the stalks if they had attained some size. We wanted them to be from the size of a marble to that of a walnut. If they are smaller than a marble, they are watery and tasteless; if much larger than a walnut (and by walnut, is meant the black wall nut of the middle west) they cook up and taste too much like mature potatoes.

With these young potatoes in hand, the cooking may proceed after they have been scraped. The thin tender skin of these young tubers rubs off easily, in fact too easily to make them a marketable product. They may be cooked in a few minutes with early vegetables that are available such as young string beans, peas, or young carrots. They are especially good with young peas. Or, the small potatoes may be creamed and served alone.

The best way of all is to fry them whole (or the larger ones cut in halves) in deep fat like French fries. The Italians like them fried to a rich, light brown in olive oil. They seem to always eat their potatoes in this way, never waiting for them to reach full size or maturity unless they want them for mashed potatoes. The potato does not grow too well in the hot climate of Italy except in the higher mountain valleys and it is from this sort of a location that these small early potatoes come into the markets. Creole cooks in the West Indies fry the small tubers grown in the mountains of British Guinea or in the crater of the Dutch Island of Saba in deep lard and serve them up in a style very much like the Italian olive-oil-cooked ones.

However you may cook them, you will find, if you have never experimented with them that these very small potatoes have a flavor and quality that is lost as the tuber matures and takes on that characteristic taste which we associate with potatoes. Of course, potatoes never have a marked taste unless they have been greened and this is the reason for their general popularity as a vegetable. For our staple food stuffs, we select something like bread that is almost tasteless—that suits everyone—then we can add any seasoning such as each individual relishes:—gravy, salt, pepper, and butter.

As has been noted, almost any of our vegetables are better in quality if they are gathered and used before they attain their full growth. Tomatoes are at least one exception to this general rule. Every good rule should have at least one good exception. Tomatoes should be allowed to ripen as much as possible on the vine before they are gathered. For this reason, the vines for the very best results, should be pruned and trained up to a stake so that the sunlight may reach the fruit. If they are allowed to sprawl over the ground without a support, they should be planted at least three feet apart so that they will have an ample amount of room.

Another good exception to the early harvesting of vegetables are the winter

squashes especially those of the Hubbard types. In all the early growth such squashes are watery, without flavor and do not cook up mealy and dry. Some of the summer squashes, however, may be kept over for some months after the vines are dead and be still of very good cooking quality.

The writer has no apologies for offering these suggestions to the readers of a gardening magazine for he feels that eating the products of your labor is worth just as much consideration as raising them. As you will note, nothing has been said about calories or vitamins. The young immature vegetables undoubtedly lack a lot of these important constituents. But these lacks are made up by their superior flavor and tenderness.

In any case, try experimental harvesting and cooking, as well as organic gardening, and you will find many new delights in store for you. You may not get as much of a yield in quantity but if quantity is all you want you can go to any chain super-market and get a lot of quantity for little money. But if it is quality you would like (of course with a fair amount of quantity) you may have it from your own garden by going out and picking its products when they are at their best and eating the best when it is at its best.

One other point may arise in the minds of readers who want a succession of young vegetables during the growing season. The suggestion that any horticulturalist would make would be to plant a succession or rows; putting them into the ground a few weeks apart. This method may work in some parts of the country with a longer growing season or a heavier soil. But with the light sandy soil which the writer has to use and the very short season in northern Vermont, he has not been successful on many vegetables. He has had to pin his hopes to planting early and late varieties of the various vegetables and even then, they will sometimes overlap in the time at which they are best and should be eaten.

CLUB NEWS

From various sections of the country we receive word that local ORGANIC GARDEN CLUBS are now being formed. These are healthy signs which should be encouraged. That the good work of these groups may not go unnoticed, we now introduce a column devoted to news from the clubs.

SAN DIEGO, CALIF. CLUB

Our new Organic Gardeners Club is a reality. We had forty-two people present for our first meeting. Officers were elected and we decided on a $1.00 a year dues. Meetings will be held at the Horace Mann Jr. High School on the third Friday of each month at 7:30 in the evening.

Local interest in our club is quite keen and several of our members are actively carrying forward the good word of Organics by lectures and adult classes in the high school.

Please send us 100 pamphlets which members of our club can hand out to prospective members.

Organiculturally yours,

San Diego Organic Gardeners Club
Robert H. Calvin, President
1903 Capistrano St.
San Diego 7, California

—o—

LOS ANGELES, CALIF.

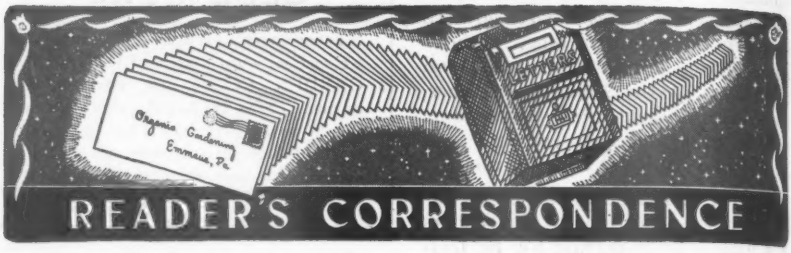
Herbert Clarence White informs us that an Organic Garden Club is now being organized in Los Angeles. His address is 16912 Brighton Ave., Gardena, Cal.

—o—

I would like to suggest the formation of an Organic Gardeners Association to bring together all interested in the subject. Gardeners who live near each other can meet once or twice a month to exchange ideas.

Yours truly,

Allan J. Field
115 Oakwood Ave.,
Cliffside Park, N. J.



Send stamped self-addressed envelope for reply.

Compost Questions

COMPOST INGREDIENTS

Q. My husband and I are planning on building a compost heap this spring. Our manure has a large amount of hay mixed with it. The manure consists of goat, chicken, goose, duck and horse droppings. We have some wood ashes and some coarsely ground limestone. Please advise me about the use of this material.

Mrs. W. O., Pittsville, Wis.

A. You have all the necessary ingredients for an excellent compost heap and the fact that the manure and hay are already mixed together is an added advantage. Lay this material down about as you would if the manure and vegetable waste were separate. When you get about eight inches of the mixed hay and manure add a light layer of fresh manure for heating and some earth, wood ashes, and ground limestone and repeat the process until your heap is five feet high. Remember to water the heap while you build it.

—o—

HEATING

Q. I made a compost according to the Indore Process in March but so far it has failed to heat. I have not turned it yet. As I had no green vegetation at this time I used fallen leaves which I had used as a mulch the past winter. Should I have used these leaves?

E. A. K., Swanton, O.

A. The leaves were perfectly all right but apparently one of three factors did not come into play.

1.—There was not enough nitrogen to produce growth food for the bacteria. Perhaps the manure was old.

2.—The heap may not have been moist enough.

3.—The heap could have been either too compact or even too loose. I am inclined to think that the first cause might be responsible and if I were you I should add some more nitrogenous material and rebuild the heap.

—o—

SLUDGE

Q. I have your booklet on "Compost and How To Make It." The basic idea appeals to me greatly. However, sewage sludge is the most available manure substitute for me. Would you advise the use of such material?

D. W., Kirkwood, Mo.

A. We are at this time investigating the question of sludge and its value as a manure substitute. To date we have no concrete information on the subject. As many chemicals go into the city sewers one cannot be certain just what most sludges contain. If your compost is to be used for lawns and

ornamentals we see no objection to its use but until more is known on the subject suggest that it not be used for growing vegetables.

—o—

APPLE POMACE

Q. I have access to new apple pomace from a nearby cider press, and would like to know if they could be used to mix with my compost heap.

C. H. K., Frederick, Md.

A. The apple pomace makes very good compost, but I suggest that you mix it with some coarser material such as weeds, hay, or straw to provide sufficient aeration. It will be necessary of course to add nitrogenous material such as fresh manure, as well as wood ashes or ground limestone.

—o—

COMPOST MAKING

Q. Is it preferable to make the heap as the material is collected or to collect the material and then build the heap in one operation?

M. D. C., Port Chester, N. Y.

A. Whatever section of the heap you are building, you should always have enough material to get the proper height so that heating takes place. You can make small additions to the heap, building on lengthwise, but you want to keep in mind that collected material that has broken down is not yet a complete compost. That it becomes only through the addition of manure or a suitable substitute, that supplies nitrogen, and an addition of phosphate rock or bone meal to add phosphorus, plus the sprinklings of lime and earth. If you have enough material to add a small section to the standard heap, go ahead and keep on adding the other required things; if not, save enough material and then build a new heap. In either case, the building process will amount to one separate operation.

GROW BIGGER, BETTER FLOWERS, FRUITS, VEGETABLES!

It's easy when you use VITALOAM—Famous Greenhouse preparation used by professional growers everywhere. Just mix with the soil. NOT a commercial fertilizer, but a Humus and Organic Soil Conditioner. Cannot burn or harm the most tender plant or seed. Only one treatment needed during the growing season. Prepare NOW for a more productive garden this coming season. Write for FREE details (3c stamp appreciated), or order from ad:

3 lb. Can—$1.00 25 lb. Can—$3.50
50 lb. Can—$6.00 100 lb. Bag—$9.00
Prepaid

SOILSERVICE "Vitaloam"
P. O. Box 131-EV2 TOWNSEND, MASS.

PLANT STAKES

Tough, wiry, long-lasting BAMBOO. A REAL Garden Necessity. 4-ft. lengths: dyed green. 100 for $2.50. Also heavier 1 inch HARDWOOD GARDEN STAKES for Dahlias, tomatoes, etc., 4-ft. lengths, natural, 50 for $3.98. (shipg. wt. 35 lbs.—direct from east Ohio mill). Express charges collect on all these items.

CLARENCE B. FARGO
14 Fargo Bldg. Frenchtown, N. J.

Peach and Apple Trees

$15.00 FOR 100 TREES
Elberta, Hale Haven, Red Delicious and Jonathan

Egyptian Nursery & Landscape Co.
Farina, Illinois

SMOOTHER COMPOST BETTER ROOT GROWTH!

Kemp Power Soil Shredders save days of back-breaking work, shredding and mixing any soil, manure and vegetable matter, wet or dry, into rich, smooth compost *with plant fibres thoroughly distributed.* All lumps and clods are shredded; stones thrown out.

Based on 48 years' experience, the Kemp machine is built to endure. Cutting teeth, for example, are spring steel that stones can't break.

Kemp Junior model ($85) shreds from 3 to 6 yds. of compost per hour.

We gladly send the Kemp catalog to all organic gardeners. It describes the machine fully and contains many pictures and pages of comment from growers, agricultural colleges and other users. Commercial growers tell us that the Kemp Power Soil Shredder saves as much as ¼ of the time and labor needed to mix compost or to prepare special soil for potting, and results in *better root growth, and sturdier, healthier, more fruitful plants.* Write for your copy today.

KEMP MANUFACTURING CO.
Dept. 4 1027 East Twentieth St. Erie, Pa.

CAPITAL EARTHWORMS
Are Nature's Soil Builders

Let them help you grow finer, more disease-free flowers, vegetables, and fruit. For further particulars, write:

CAPITAL EARTHWORM FARM
2514 Fourth Street, South
ARLINGTON VIRGINIA

TERRACULTURE
(EARTH CULTIVATION)

Hybrid Earthworms build topsoil and make nourishment quickly available to plants and crops.

Write for Literature and Price List

TERRACULTURE
Route 1 Mount Vernon, Ohio

Properly-Bred - Properly-Fed - Properly-Raised
LaRoy EARTHWORMS
- REBUILD WORN-OUT SOIL -

Gardeners — Poultrymen
Fishermen
Put them in compost heap; or directly in soil. Enjoy tastier vegetables and fruits; more luxuriant flowers; healthier trees, shrubs and lawns.

Write for Price List And Information To:
C. E. LaROY
Route No. 3
DECATUR, GA.

KITCHEN HERB CHART
TELLS ESSENTIAL USE FOR ALL
CULINARY HERBS IN COLOR 75c
PLUCK HILL HERB FARM
P. O. Box 486 Torrington, Conn.

Finer Vegetables
Gorgeous Flowers
Better Fruit
RIDGELIZER
Pure Organic
FERTILIZER

—A Highly Valuable, Basically Rich Organic Manure.

No crop is better than the ground it grows in. This dehydrated chicken manure, with twice as much nitrogen, phosphoric acid, and potash as the law requires; will build rich, fertile, soil for you.

50 lb. Bag $1.50
25 lb. Bag .90
10 lb. Bag .40
5 lb. Bag .25
F. O. B. Lakehurst, N. J.

Processed and Sold Direct by
Ridgeway Fertilizer Co.
(P. O. BOX "Q") LAKEHURST, N. J.

SLAUGHTER HOUSE BLOOD

Q. I can get any amount of blood from a slaughter house and wonder if it is good for the compost. It comes from cows and pigs. What should I do with the blood?

S. B. V., Washington

A. The blood is wonderful as a source of nitrogen and will activate the breakdown of the plant material easily, if the heap is kept at its regular moisture. Care must be taken to keep dogs and flies off and I would therefore suggest that you use special care with the outside earth covering, which will also prevent odors in the first stage. If your plant matter can be cut, so that it packs more easily, you can soak the whole material with blood. If the material is stalky or strawy so that blood will run through you want to be careful again that you wet the plant matter well with blood and that the earth sprinklings are sufficiently heavy to check the running off of blood.

•

General Garden Questions

ROCK MULCH AND LEAVES

Q. I have an apple tree that has not been doing so well and I would like to see whether I can improve it by mulching such as suggested in O. G. I have plenty of leaves of the tree to be treated. Would using the leaves have a tendency to increase the worm condition of the fruit instead of decreasing it?

A. F. P., Phillipsburg, N. J.

A. We would not use diseased leaves under a rock mulch. Wherever disease is suspected the leaves should be thoroughly composted first in a regular compost heap. It might be dangerous to use such leaves under rocks because disease elements might be transmitted to the soil. You must, however, realize

EARTHWORMS
BUILD UP YOUR SOILS!

STOP murdering them, and STOP killing soil bacteria. SOILSERVICE Humus and Organic Soil Conditioners and the Earthworm—build up and put life in your soils—increase your crop yield. Get the facts! Send 3c stamp for literature and prices on Ruhm's Natural Phosphate Rock, Humus, Composts, Natural Manures and "Soilution" Earthworms, or order from ad:

EARTHWORM CULTURES
Gal. $11; ½ Gal. $6.
(3 containers)
$2.50 Prepaid

RUHM PHOSPHATE ROCK
100 lb. bag $2.50
Ton $28. F.O.B.
Townsend, Mass.

SOILSERVICE P. O. BOX 131-EE2
TOWNSEND, MASSACHUSETTS

EARTHWORMS
For the Compost Heaps and
Biological Soil Building

Direct to you from the Southern California successors of the famous pioneer earthworm breeder, Dr. George Sheffield Oliver, producer of the Domesticated "Soilution" Earthworm—the "Miracle Worm" for Humus production in orchard or garden.

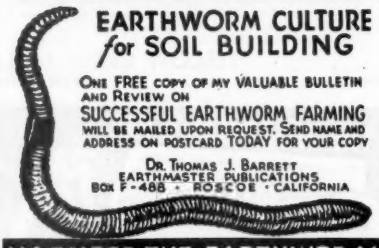
ADDRESS
Herbert Clarence White, Director
BIOLOGICAL RESEARCH FARMS
16912 Brighton Avenue Gardena, California

EARTHWORMS
HELP TO MAKE YOUR YARD AND FLOWERS MORE BEAUTIFUL!
Save money, labor, water with a living organism, that conditions your soil . . . permanently. For full information write:
EL SOBRANTE EARTHWORM FARM
749 Rincon Road El Sobrante, California

EARTHWORMS
For the Garden, Trees
Flowers, Shrubs, etc.
Write for Prices and Instructions
Hillsboro Earthworm Hatchery
4034 Fairview Ave. St. Louis 16, Mo.

EARTHWORMS
Send stamp for price list and instructions on raising the
FAMOUS "SOILUTION"
earthworm for Agriculture — Poultry — Bait.
Colorado EARTHWORM Hatchery
2134 Decatur Street — Denver 11, Colorado

EARTHWORMS
THE FARMER'S MOST PROFITABLE LIVESTOCK • THEY BUILD TOPSOIL



EARTHWORM CULTURE
for SOIL BUILDING
ONE FREE COPY OF MY VALUABLE BULLETIN AND REVIEW ON
SUCCESSFUL EARTHWORM FARMING
WILL BE MAILED UPON REQUEST. SEND NAME AND ADDRESS ON POSTCARD TODAY FOR YOUR COPY
DR. THOMAS J. BARRETT
EARTHMASTER PUBLICATIONS
BOX F-488 • ROSCOE • CALIFORNIA
HARNESS THE EARTHWORM

EARTHWORMS
NEEDED FOR FINE GARDENS
Write for folder

OHIO EARTHWORM FARM
Oldest Earthworm Breeder
WORTHINGTON, OHIO
Air Express provides round world service.

EARTHWORMS
Domesticated Hybrids
Creators of Natural Humus
— Send for Folder B-57 —
Topsoilers
13243 Mark Twain; Detroit 27, Michigan

EARTHWORKERS
(Domesticated earthworms)
Make your compost into humus without turning
The unpaid gardener and soilbuilder
Send for FREE Pamphlet
ORGANIC GARDENS
Perry Hall Fullerton P. O., Md.

EARTHWORMS
Write for free information on their propagation, and use in composting and gardening.
Richwood Earthworm Hatchery
Richwood, Ohio

Water-Ground Meal

5 lb. bag Whole Wheat Flour $1.00 Postpaid
5 lb. bag White Corn Meal $1.00 Postpaid
5 lb. bag Yellow Corn Meal $1.00 Postpaid
Add 25c Extra Each Bag West of Miss. River

Yellow Creek Mills has been grinding water-ground meal since 1830. For that old-fashioned meal with full flavor you can't beat Yellow Creek corn meal and whole wheat flour.

YELLOW CREEK MILLS
R. D. No. 7 AKRON, OHIO

THE WOODMAN'S PAL
AT ALL DEALERS
Only complete tool for farmers, planters. Has long safety edge and brush-hook; cuts briars, saplings, corn, flush with ground. Indispensable for clearing land, fence rows, and harvesting.
Send for FREE circular
No. 740-5
The VICTOR TOOL CO., Reading, Pa.

100% NATURAL ORGANIC **NI-BAC**

Compost-Inoculated SOIL ACTIVATOR
Now Available For Your Soil

Developed by the Dr. G. H. Earp Thomas Process. With essential organic minerals plus nitrogen and sulphonating bacteria. Replenishes the bacteria your soil must contain for vigorous, disease-free growth. Folder on request.

Write to PETTIE'S SOIL FOOD CO., Inc.
334 Bergen St. Gloucester City, N. J.

IRIS SPECIAL

California Gold—Large deep glittering yellow
Crystal Beauty—Splendid pure white
Red Dominion—Huge deep lustrous red
Royal Coach—Yellow penciled bronze
Sierra Blue—Immense enamel blue

One Each of the Above Labeled $1.50 Postpaid
Catalog Free Listing Many Novelties

LAMB NURSERIES
E. 101 Sharp Box O Spokane, Washington

BUY A GARTOOL
GARDEN LINE & MEASURING STICK
EVERY GARDEN NEEDS ONE
HANDY—INEXPENSIVE—NON-RUSTING
With 50 ft. of Line, $1.00. 100 ft. of Line, $1.25.
Add 15c (West of Miss. 25c) for Mailing
The Garden Toolhouse
290 Linden St. Wellesley, Mass.

100% COMPLETE WHEAT FLOUR

containing all vitamins and minerals of the wheat kernel, milled powder fine, on the day of shipment by the only process of its kind in the United States.

10 lb. Package—$1.50 Plus Parcel Post
HI-VITA MILLING CO.
P. O. Box 1245 — Dept. B — Milwaukee 1, Wis.

Hardy MUMS. 8 varieties for $2.00 postpaid. Each plant labeled separately. All good varieties. 5 Cushion Mums for $1.25 postpaid. Send for illustrated list of more than 200 varieties of the best in hardy chrysanthemums, including 50 varieties of the new English mums.

Geo. Hennings Greenhouse and Nursery
Growers of Quality Chrysanthemums
R. F. D. 4, Swanton, Ohio

that worms in apples are not a disease but an infestation by insects. It has been definitely shown that some plants and trees are more resistant to insect attack than others and also that some deficiencies may increase or decrease insect pest attacks. While there is no indication that codling moths can be controlled fully, we have heard from some readers that they got good fruit without worms after using compost mulches, by which the trees were properly fed. In case there should be a deficiency it would therefore be best to use an all around compost so that you can be sure to get many different plant nutrients to the feeding roots of your tree.

—o—

TREES AND FARMS

Q. Just how important are trees for the farm? I recently purchased a farm of over fifty acres which is all under cultivation. I have been thinking of planting trees along the outside borders of the farm and also between fields. I hesitate because of the loss of land. I am told that land thirty feet around trunk of tree is worthless. Is this true? Also they will interfere somewhat with plowing.

C. D. V., Indiana

A. If properly spaced so that plowing will not be impeded unduly, the trees will bring you more than they take away. If the field cannot support deep-rooting trees and a regular crop it should be fertilized. While it is true that most crops will show a slight decrease near trees, the trees will also produce. In some parts of Southwestern Germany and Northern Italy the mixed form of orcharding and crop growing has proved highly successful because it required the farmers to keep up the fertility of the land. Do not forget either that trees are natural subsoilers and that their windbreaking activity will check blowing. I recently had an instance of this with a neighbor who simply felt that he had to even out everything and thus cut

down his trees and hedges. Up came a little twister of hurricane type and blew over a corncrib and took part of a barn roof. You can imagine how much soil is blown away too. One consideration is, however, necessary. If you plant fruit trees consider the harvesting requirements and labor involved, choose late maturing varieties. If your land supports cherries or black walnuts or Chinese Chestnuts, you may also produce a valuable lumber crop and could get good advice from the Department of Agriculture and your State Forestry Department. And don't forget the appearance either, trees make a difference in looks.

—o—

DIGGING IN COVER CROPS

Q. We have planted our garden last fall to rye and wonder what else we should add when we dig under this cover crop in spring.

F. B., Rye, N. Y.

A. If you can add manure or hoof meal or some other source of nitrogen when digging under the rye sod you will escape the danger that the bacteria will use up soil nitrogen for breaking down the cover crop. It is true, young plants have considerable amounts of nitrogen in them, but even so your crops may suffer if your soil is somewhat on the deficient side.

—o—

SULPHUR OR PEAT MOSS

Q. Will sulphur hurt the soil and the bacteria? I have been instructed by a nursery catalogue to put a handfull around each blueberry bush. O. K.?

J. C. K., Indiana

A. Who strews sulphur around blueberries in the wild? If your soil is not acid enough, I'd go in heavily for acid peat moss, for sawdust, oak leaves, and get raw humus in the land which will produce acidity. Be sure to get acid peat, about which you can inquire at your Experiment Station in Lafay-

For $1.50 You Can Present 1 Year's Subscription of Organic Gardening to Either a Library, or College, or School, or Institution or Doctor's Office.

Though the regular price is $3.00 a year we make this offer at a cost of $1.50 to our readers because:

1. It is a splendid way for you to help spread the organic message to a larger public audience . . . . among readers who otherwise may not have the opportunity of learning about the advantages of gardening with organics.
2. It provides a means of instilling the thought in the minds of our younger generation that fertile soil—made fertile without the use of harmful, chemical fertilizers—is the foundation of healthy crops, healthy livestock and healthy human beings.
3. It gives you an outlet for action: a chance to do a good turn for the organic cause.

Note: You pay ½ price. We donate the other half. Send $1.50 for each subscription that you wish to contribute. Please designate to whom you want us to send your gift. We will enclose your name.

Offer limited to libraries, institutions, schools or doctor's office.

Send check or money order to:

Organic Gardening, Dept. H.
Emmaus, Pa.

FREE BOOK!

WITH YOUR SUBSCRIPTION

Subscribe to

Organic Gardening

Let **Organic Gardening** guide you in growing vegetables and plants with organic, composted matter. Eliminate the use of synthetics, chemical fertilizers, poisonous sprays and powders.

Fill in and Send in this Coupon Now

ORGANIC GARDENING, Emmaus, Pa.

Please enter my subscription to **Organic Gardening** as checked below. Include **FREE** book, "Compost—How To Make it"—which will teach me your method for making compost in three months.

☐ $3.—1 Year ☐ $7.—3 Years
☐ $5.—2 Years ☐ Please bill me
☐ Please check if this is a renewal.

If you renew your subscription now, regardless of when it expires, we will send you **FREE** a wonderful flower guide, "Flowers for Everyone".

Name .....

Street .....

City..... Zone..... State.....

With Playing Cards

. . . a new, absorbing game originated and created by Rodale Press with a series of booklets by Professor Rafael D. Soto of Lehigh University. These booklets represent a comprehensive Spanish language course.

HAVE FUN WHILE YOU LEARN. A tried and proven method for learning quickly, easily, inexpensively.

Packaged in beautiful, gay box. Each set—complete in itself—consists of two 48-card decks in a separate book-like box. They are: 1. Animals; 2. Comparisons; 3. Synonyms; 4. Opposites; 5. Occupations. Start now. Order all five sets in a colorful, master box as illustrated.

A Wonderful Gift — 5-Box Set, Including 5 Booklets — **$4.00** POSTPAID

Address Dept. O. G. 8
RODALE PRESS .:. EMMAUS, PA.

"VELAZQUEZ"
SPANISH-ENGLISH
ENGLISH-SPANISH **Dictionary**

New Revised, Ready-reference Edition. Contains the whole vocabulary in general use. Arranged alphabetically in two parts. Part I gives Spanish word and English equivalent. Part II gives English word and Spanish equivalent. Clear, readable type; excellent paper; cloth binding. 6¼" x 9¾". 766 pages.

PLAIN $4.50
INDEXED $5.50

RODALE PRESS EMMAUS, PA.

NOTICE TO READERS

The ORGANIC GARDENING Magazine does not accept advertising of chemical fertilizers or other fertilizers which we feel are too strong for the land or poisonous sprays. We do not deny firms access to our advertising columns if they handle chemical fertilizers if they have another acceptable product to sell. The reader should be careful in accepting such advertisements. Our responsibility extends only to the product advertised in our magazine. It does not extend to all of the products handled by a concern

ORGANIC GARDENING Emmaus, Penna.

ette as to sources. For peat moss occurs in all degrees of acidity. As you know sulphur is used to deter certain plant pests, thus it is obvious that sulphur is capable of destroying or damaging microbial life.

—o—

DOLOMITE OR LIME

Q. Just what is dolomite? Does it have different qualities from other limestone?

H. L. S., Pennsylvania

A. Dolomite contains magnesium besides limestone, varying in quantities from very low to about 40 per cent. Many limestones sold commercially for agricultural and gardening needs are actually dolomites, though the analysis is not given on the bag. Magnesium tends to cut down on the potash uptake of the plant and thus produce a different composition of the plant. A lack of magnesium is a source of plant disease, an excess of potash has been by some scientists associated with cancer incidence in people.

—o—

ONIONS

Q. What is your position with regard to onions? How many should a man eat for his health? What effect does the soil have on them?

P. A., Kentucky

A. We have no particular theory about the way onions are to be eaten and in which quantities. We do not know what effects an excess would have but are afraid that you would have indigestion. It is always best to balance such foods. Onions can use a great deal of rich soil, but will be better keepers if grown on dry soil that is not too rich. They are very indifferent as to sites but you have to pick your variety according to the latitude where they are to be grown because different onions go to seed under different lengths of day. I would follow, therefore, the recommendation of State College in this connection.

RUE

Q. Does the herb Rue produce skin blisters? I would not want to plant it if it was dangerous.

K. J., Morristown, N. J.

A. During the flowering time, rue seems to be especially irritating to some people, raising strange round blisters which develop into little holes; there is no itching connected with it and the irritation would go unnoticed except for its peculiar form. Many people seem to be immune. There is no reason for doing without this herb plant, which is one of the best looking of all herbs, since you will not have to come in contact with it. Its active principle, rutin, is also found in buckwheat, flue-cured tobacco, etc. and you will get equal effects on your health by using orange peel. The rue is, indeed, too bitter to be of use except as a possible addition to beverages.

—o—

AMAZON LILY

A. A garden magazine contained a glowing account of the Amazon lily. Can it be grown in Michigan?

Mrs. H. O. 'M., Detroit, Mich.

A. Not in the open. The Amazon lily is a conservatory plant in the North and should be kept on the moist, half shaded side. While it is a beautiful and exquisitely fragrant flower, its domain is rather more in the Southern and Western states.

—o—

SESAME

Q. Sesame seed seems unobtainable and I wonder if you could give me a source for it and directions on how to proceed.

H. J., Santa Barbara, Cal.

A. We are sending you the name of a supplier on a separate sheet. Sow the seed about the time you sow petunias and let the sturdy plants grow. They require no care and are apparently free from pests. I have obtained a fine crop in Emmaus, Pa.

GARDENERS' FAVORITE READING

●

THE COMPOST GARDENER
by F. C. KING

An English gardener relates his method of growing food crops by the organic plan. This book is so revealing that we imported it for the benefit of health-conscious America. Cardboard covers. Foreword by Sir Albert Howard $1.50

COMPOST—HOW TO MAKE IT

Series of questions and answers that clear up all phases of compost-making. Hints that amaze old-time gardeners. Illustrated. Indexed. 25c

BIO-DYNAMIC FARMING AND GARDENING
by DR. EHRENFRIED PFEIFFER

Describes the bio-dynamic methods in full. Shows how to convert a low-productive farm and garden into a high-productive, bio-dynamic one. 240 pages. Clothbound. $2.50

GROW A GARDEN
by DR. EHRENFRIED PFEIFFER AND ERIKA RIESE

The authors draw from their many years of practical experience, giving detail information for growing each vegetable from the bio-dynamic point of view. 118 pages. Illustrated. $1.40

EARTHWORMS—THEIR INTENSIVE PROPAGATION
by DR. THOMAS J. BARRETT

Complete, practical working directions for breeding, feeding, growing and harvesting mans' most important soil-builder. The author, an authority on earthworm breeding, maintains an experimental, research farm for the purpose of verifying claims, establishing facts and securing data that are set forth in this excellent book. $1.00

Order Direct From

ORGANIC GARDENING

EMMAUS . . . . . PA.

Classified Ads

ORGANIC GARDENING is accepting classified advertisements for this page. Rates are 12c a word. Minimum 25 words. Payable in advance. Include name and address in word count.
ORGANIC GARDENING . . . . . EMMAUS, PA.

FLOWERS

CHRYSANTHEMUMS—Hardy, English and Northland Daisies. We are introducing National Velvet and Catherine Collins, two outstanding new seedlings for 1947. Get our free catalogue listing 200 varieties and many worthwhile perennials. **OMAR COLES, Magnolia, New Jersey.**

CHRYSANTHEMUMS—Ten, beautiful, labeled Chrysanthemums. Including Summer Sunset, $2.00 postpaid. Field-grown Catalog Iris and Chrysanthemums free. **SUNSET VIEW IRIS FARM, Constantine, Mich.**

CHRYSANTHEMUMS root cuttings from field-grown plants. Mixed varieties, 40 for $2.00. Postpaid. **F. D. BARNEY, R.F.D. I, Mount Prospect, Illinois.**

DAFFODILS ON PARADE: 1947 issue now ready for distribution. Prices and descriptions on 482 varieties of the world's finest Daffodils. Write for your copy. **THE DAFFODIL MART** (formerly represented by Hodge Podge Shop), **Nuttall P. O.—Gloucester Co.—Va.**

HONOR ROLL and Dahlias of Merit. Prices reasonable. **THOS. L. GALVIN, 7 Belleview Ave., Peabody, Mass.**

DELPHINIUM SEEDS: World's finest strain. Price list on request. **BEERMAN'S DELPHINIUM AND COLUMBINE GARDENS, Canby, Oregon.**

DELPHINIUM. Giant Pacific Hybrids and Lyondel. Will bloom this summer. Organically-grown plants in mixed shades; 12 plants $1.75; and 36 for $5.00. Postpaid **SCHON-O-WE GARDENS, Box 79, Dept. D., Schenectady, N. Y.**

DELPHINIUMS. Giant Pacific Hybrid, in all their matchless colors. Plants and seed of superior quality. Write for free literature. **OFFERMAN DELPHINIUM GARDENS, 4709 W. Stevens, Seattle 6, Wash.**

GROW big, Glistening Blooms with Flowering Dogwood seed; hand picked from choice trees on the famous Dexter Estate, Sandwich, Mass. Large package $1 postpaid. **EBEN WOOD, 145 Spring St., West Bridgewater, Mass.**

GLADIOLUS—Grower's surplus—fine large bulbs—mixture contains all colors and many varieties—$4.00 per hundred. Postage extra. **ELLEN D. BROADHURST, Hellcong, Pa.**

HEMEROCALLIS (day lilies). The new hybrids, labeled true to name, have their place in all well-appointed gardens. They never fail you. Grown with Indore Method composted soil, making larger plants and finer blooms. Descriptive list on request. **AMARYLLIS GARDENS, 15 Sereven Ave., N. E., Atlanta, Ga.**

NEW HEMEROCALLIS listed in color sequence. Bagdad, J. Crawford, Lemona Goldent, Mikado, Vesta, worth $2.35, for $1.90. All types of iris. An list on request. **KENWOOD IRIS GARDENS, 7595 Montgomery Road, Cincinnati, Ohio.**

IRIS, Each different 15—$1.00. Chrysanthemums—6 labeled, varieties,—$1.00. Strawberries, Mastodon Everbearing—40—$1.00. Nursery catalog free. **CORNELL NURSERY, Cornell, Illinois.**

"40 IRIS, each different, unlabeled $3.50; labeled $5.00. Free list of German, fall, dwarf, and Siberian Iris, also hemerocallis. 400 varieties. **DARE'S GARDENS, 15379 Chatham, Detroit 23, Michigan".**

WINNING IRIS from WINNE'S GARDENS. 12 fine Rainbow Color Iris for $1.00 postpaid in U. S. A. Send postcard for Iris and Gladiolus catalog free. **WINNE'S GARDENS, Beatrice, Nebraska.**

PANSY PLANTS—Steele's Mastodon Jumbos, 5-inch blooms, gorgeous colors. Now time to plant. Selected plants, 50 for $2.00; 100 for $3.50. Postpaid. **WARD'S PANSY GARDEN, Route 3, Macon, Ga.**

SEMPERVIVUM—COLORFUL HEN AND CHICKS. 10 varieties, labeled, prepaid, only $2.00. **MacPHERSON GARDENS, 350 Van Buren St., Dept. O, Toledo 5, Ohio.**

TETRAPLOID SNAPDRAGONS—Biggest flowers, rich colors. To be sure, order plants now. Husky, weather-hardened, twice transplanted, 80c doz. prepaid; 50 or more express collect, 5c each. May—June delivery. **PAUL WARD, PLANTSMAN, Hillsdale, Michigan.**

THE NEW GIANT ROYAL ELK VIOLET. Large blossoms, heavy velvet petals. Stems 9-12 inches. Stands erect. Sturdy prolific and fragrant. Brilliant green all year. Plants 50c, 3 for $1.00. One other variety free with order. Add 20% packing and postage charge. **HAPPY VALLEY VIOLET FARM, Rt. 1, Box 820, Santa Cruz, Calif.**

WILD FLOWERS AND FERNS. To brighten shady nooks or sunny spots in the garden. Free booklet. **WAKE ROBIN FARM, Route 1, Box 33, Home, Pennsylvania.**

NATIVE WILD FLOWERING PLANTS of Nature's own garden: Rhododendrons, azaleas, evergreens, perennials, aquatic orchids, ferns and vines. Free catalogue. **THE THREE LAURELS, Marshall, N. C.**

NURSERY STOCK

RHODODENDRON, MOUNTAIN LAUREL, HEMLOCK, AZALEAS, DOGWOOD, RED MAPLE. 2 to 3 feet; 5 for $1.75, 10 for $3.00, 25 for $7.00, 100 for $25.00. 3 to 4 feet; 5 for $2.50, 10 for $4.50, 25 for $10.00, 100 for $35.00. **FOREST EVERGREEN CO., Doeville, Tennessee.**

BERRY PLANTS

IMPROVED BLUEBERRIES. Delicious U. S. Gov't. Hybrids; large as grapes. 2 Yr. Plants, 70 cents each; $8.00 per dozen. 1 Yr. Rooted Cuttings, $5.00 Doz., $40.00 per 100. **GEO. E. MORSE, Williamson, N. Y.**

VEGETABLE PLANTS

CABBAGE, TOMATO, Pepper, Eggplants. Ours a specialty. Write for prices. Pennsylvania Grower. **GUZEY PLANT FARMS, Valdosta, Ga.**

CHOICE FRUIT

INDIAN RIVER FRUIT. Florida's juiciest, fresh from trees. Per bushel, express prepaid to North-Central States (northward and westward, more; southward, less): Seedless Grapefruit, $4.45; half Seedless Grapefruit, half Oranges, $4.70; Oranges, $4.95. Special Pack of any of above baskets, containing seasonal grove specialties, $1.00 per bushel extra. **SCHUYLER JACKSON, Wabasso, Florida.**

ORANGES at reduced prices. Rio Grande Valley's best variety delivered to you for only $4.90 per bushel. **RALPH GETZELMAN, McAllen, Tex.**

COMPOST—SOIL TESTING SERVICE

IF YOU SUSPECT YOUR SOIL IS UNDER PAR. Our scientific testing service for composts, manures and soils will check if conditions are favorable for healthy growth and high yields; then prescribe ways and means for restoring and maintaining soil fertility. **Knowing your soil is the first essential step toward garden success.** Learn with accuracy whether your soil is acid or alkaline. Discover to what extent it is deficient in humus, bacterial and mineral content. Find out if your compost and manure is decaying properly . . . . if plant food elements are out of balance. Value of our service lies in our complete analysis plus the written report you receive recommending easy-to-follow corrective measures. If requested, we advise on soil and crop problems in general. Send card for full information, costs, and shipping instructions for sending samples. No obligation. **BIO-CHEMICAL RESEARCH LABORATORY, Dr. Ehrenfried Pfeiffer, Director. Three Fold Farm, Spring Valley, New York.**

KNOW YOUR SOIL. Chemical Analysis of soil nutrients. Immediate service. For further information and containers write: **SUBURBAN SERVICE LABORATORIES, Dept. O, Box 208, Glenside, Penna.**

ORGANIC GARDENING

FERTILIZERS—SOIL CONDITIONERS

SHREDDED PEAT HUMUS $1.50 per 100 lb. bag. Same sterilized, $2.50. Sterilized potting or starting soil $2.50 per 100 lb. bag. Above prices F. O. B. Akron, Ohio. **H. W. CODDING & SONS, Peat Soil Products, Copley, Ohio.**

COLLOIDAL SOIL MINERALS, for garden and compost heap. Contains over twenty elements. You can plant seeds in it. Write for literature. **BRABON FARM, Telford, Pa.**

POULTRY MANURE: 100 lbs. in 50-lb. bags $2.00; 500 lbs. in 50 lb. bags $9.00; 1000 lbs. in 50-lb bags $16.00; 2000 lbs. in 50-lb. bags $25.00. **DIAMOND STATE EVERGREEN CO., Milton, Del.**

GARDEN BOOKS

"QUICK-RETURN METHOD OF COMPOST-MAKING" by Maye E. Bruce of England. Send 50c for copy delivered by mail giving full information for making compost better and quicker. **THE GREAT VALLEY MILLS, Soil and Seed Dept., Paoli, Pa.**

GARDENER'S BOOK CLUB—Enroll now! Receive 12 helpful books—a surprisingly-different book each month. Interesting reading for amateur gardeners, flower growers, farmers, orchardists and horticulturists. **Send application and $4.00 for a year's membership direct to Dept. GB-5; Organic Gardening, Emmaus, Pa.** For further details see advertisement on page 64.

FOR INTERESTING BOOKS, For a bigger and better farm and Garden, Send for Folder, or order from page Adv. in Feb., March & April 1947 issues. **LIGHTNING SPEED MFG. CO., P. O. Box 115-Y, Streator, Illinois.**

GARDEN EQUIPMENT

ADJUSTO PLANT STAKES. The stake that is adjustable to your individual plants and requires no tying. Indispensable for peonies, delphinium, berry bushes, tomatoes, etc. Priced from 10 cents up. Send for illustrated circular. **MONROE PEONY FARM, Box 0253, Monroe, N. Y.**

FLEXO ADJUSTABLE RAKE. For garden or lawn, tines replacable if damaged. 16 rustproofed Swedish steel tines, 24" wide (extended), 4½ foot handle. $3.00 each, check or money order. Express collect. Circular upon request. **A. W. WALTER, 75 Reid Avenue, Port Washington, N. Y.**

COMPOST BOXES

WILLOW GROVE Prefabricated COMPOST BOX. One box does the work of two. See ad on page 8 for description and illustration. **WILLOW GROVE EARTHWORM HATCHERY; Willow Grove, Pa.**

FLOWER SEEDS — SOIL HEATING

CALIFORNIA FLOWER SEED specialty list free. Dependable soil heating electric units for 3x3 - 3x6 - 6x6 - 6x9 - 6x12 ft. beds. Write us. **RANSOM SEED CO., San Gabriel, Calif.**

COMPOST ACTIVATORS

BRUCE-FORMULA, QUICK-RETURN COMPOST ACTIVATOR HERBS. Use with or without manure. Now in stock. Send $1.00 for Activators, enough for 4 heaps, each 6 ft. x 6 ft. Send postcard for information. Send 50c for Maye E. Bruce Book "Quick-Return Method of Compost-Making". **THE GREAT VALLEY MILLS, Dept. O. G., Paoli, Pa.**

WANTED TO BUY—SEEDS, GRAINS

WE ARE PURCHASING HIGH GRADE ORGANICALLY-GROWN GRAINS. Send us your offers on organically-grown Corn, Wheat, Rye, Buckwheat and Sunflower seed. Send postcard for prices and delivery of Quick-Return Compost Activator Herbs—**MAYE E. BRUCE FORMULA**—and free list of water-ground products. **THE GREAT VALLEY MILLS, Dept. O. G., Paoli, Pa.**

MONEY-MAKING ACTIVITIES

DISTRIBUTE SUBSCRIPTION-GETTING BOOKLETS. Help spread the organic message. Nothing to sell. Merely hand out these booklets to likely subscriber prospects of Organic Gardening Magazine. Coded coupon permits us to trace source of subscription to your efforts. Liberal commission. **See Page 33 for complete story.**

EARTHWORMS

FARMERS — GARDENERS — POULTRYMEN — FISHERMEN—Help us to help you. Write for information on Domesticated Earthworm Culture. **KEYSTONE EARTHWORM HATCHERY, 15 N. 30th, Harrisburg, Pa.**

FOR DOMESTICATED EARTHWORMS to build your garbage and waste materials into organic rich soil; call or write **MRS. L. JONES, 1515 E. 76th, Seattle 5, Washington.**

RABBITS

PEDIGREED DOMESTIC RABBITS for sale. Medium-sized breeds, $5.00 each for junior stock; $10.00 each for breeding-age animals. Giant breeds, $7.50 each for junior stock; $15.00 each for breeding-age stock. Non-pedigreed stock of medium or Giant breeds, $4.00 each for juniors, and $8.00 each for seniors, ready to breed. **JOHN E. HOLTZINGER, 512 S. 22nd Street, Altoona, Pa.**

DOGS

ENGLISH SHEPHERDS—Border collie puppies, all ages, both sexes, choice colors. Faithful workers. Satisfaction guaranteed. **FAIRMOUNT FARMS, Cedar Falls, Iowa.**

MISCELLANEOUS

WIGWAM FLUE DOCTOR. Guaranteed, down-draft, creosote cure. Copper device. Cleans chimneys permanently. Mailable. For information, write **WIGWAM FLUE TOP COMPANY; Abington, Mass.**

The purpose of The Trading Post is to bring together the buyer and seller of organically-grown food products. It is our answer to a constant stream of letters which we received from our readers asking for suggestions as to good places to buy all sorts of organically-grown foods. If you wish to buy or sell organically-grown foods and want to be listed in The Trading Post columns please send advertising copy as soon as possible to
ORGANIC GARDENING, EMMAUS, PA.
Rates are 12c a word. Minimum 25 words. Payable in advance. Include name and address in word count.

FOR SALE— ORGANICALLY GROWN FOOD PRODUCTS

VERMONT MAPLE SYRUP, 100% Pure. The flavor of bushes varies; ours is meltingly delicious and aromatic. $3.50 for 11 lb. gallon. Transportation prepaid. **PAUL LADD, Jamaica, Vermont.**

FRESH GARDEN ASPARAGUS. Quick-frozen. Three 12 oz. boxes; choice tips; postpaid $1.50. Organically-grown; no sprays, no chemicals. Other products. **A. R. CHAMBERLAIN, The Knolls, South Hadley, Mass.**

APPLE BUTTER, homemade, delicious, old-fashioned. One-fourth bushel apples concentrated to each quart. NO SPRAYS OR DUSTS. Other products. **PAUL KEENE, Penns Creek, Penna.**

CORN AND WHEAT FLOURS AND MEALS. Organically-grown water-ground products. Free list. Write for prices and information. **THE GREAT VALLEY MILLS, Dept. O. G., Paoli, Pa.**

BINDERS

For Gardeners' Book Club Books

HOLDS 12 BOOKS You'll find it handy to use these binders. An ideal way to preserve your copies for permanent reference. The price is lower than actual binding. Especially designed for the Gardeners' Book Club, holds a year's membership supply (12 books). Copies are easily inserted. Order yours TODAY.

$2.00 POSTPAID

ORGANIC GARDENING, Emmaus, Pa.

You Can Help

THE ORGANIC PROGRAM

Please Support
Organic Gardening Advertisers
Every Order You Place With Them
Advances The Organic Plan.

Enroll in the 1946-47

Gardeners' Book Club

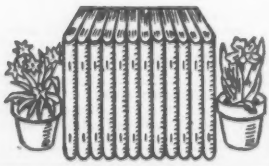
YOU WILL LIKE AND APPRECIATE
THE NEW PLAN. THIS IS WHY!

With the new plan you will receive a more pleasing mixture of books . . . . an ideal combination from our own staff of writers plus reprints of the finest editions from world-famous publishers. Before the new plan went into effect the Gardener's Book Club relied entirely upon its own staff of writers; authors who contributed articles to "Organic Gardening" Magazine. Fortunately, for our members' continued reading pleasure, we have made arrangements to condense and publish many of the outstanding new and old best-sellers. There are reprints of books from Harcourt, Brace and Co., W. A. Wilde Co., Macmillan Co., Doubleday Co., and Houghton Mifflin Co.

Join now! Share in this wealth of wonderful gardener's reading. Each book is carefully selected with an eye on the needs and interests of the home gardener, farmer, orchardist, flower grower and plant lover. There are books for reference . . . . for study . . . . for relaxation. All are prodigal with hard-to-find hints.

For $4.00 a year, the mailman will present you with a handy-size, surprisingly-different book each month.

The club plan saves you $2.00. Separately the 12 books retail at $6.00. Send your $4.00 now—your complete cost for this garden library.



Send Your Money Order or Check to

GARDENERS' BOOK CLUB

EMMAUS . . . PENNA.

YOU CAN STILL ORDER THE FOLLOWING BOOKS FROM THE 1945-46 BOOK CLUB

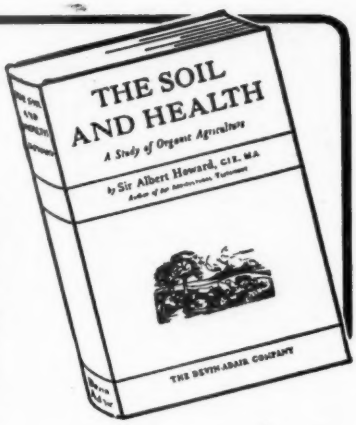
- The Fruit Orchard
- Questions and Answers on Compost
- Leaves and What They Do
- Animals and the Gardener
- Sunflower Seed—The Miracle Food
- Luther Burbank
- Our Friend, the Earthworm
- The War in the Soil
- Seedlings
- Weeds and What They Tell
- Gardens Beyond the Rainbow
- The Formation of Vegetable Mold Through the Action of Earthworms

TWELVE BOOKS ABOVE—$4.00

If you join the 1945-46 club you will receive all the above books at one time.

By *SIR ALBERT HOWARD, C.I.E.*

● *a GREAT, NEW Book*



A remarkable follow-up to "An Agricultural Testament" that brings you up-to-date on compost-making. This notable, new book is a summation of Howard's life-time association with the revolutionary organic farming and gardening movement. Howard, a world-renouned soil scientist and bacteriologist whose specialty is investigating the diseases of crops and animals, tells in detail how to produce the principal food crops of the world for full nourishment, quality and yield. You will enjoy reading of Howard's world-wide studies and experiments . . . . how farmers, using his advice and methods are restoring their depleted lands with compost humus . . . . are growing crops resistant to disease, parasites and pests. The importance of this book lies in the practical help and inspiration it will lend to your gardening and farming.

"The Soil and Health" complements "An Agricultural Testament". Buy both books. They should be in every gardener's and farmer's library.

Order your copy now. 320 pages. Illustrated and diagrammed.

$4.00 Postpaid

THE SOIL AND HEALTH

A Study of Organic Agriculture

An Agricultural Testament

By *SIR ALBERT HOWARD, C.I.E.*

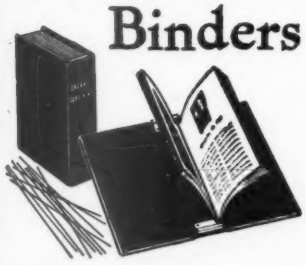
A classic that will convince you that the salvation of world agriculture and the well-being of mankind depends upon the adoption of the principles laid down in this book. It is the complete history of compost-making during the last thirty years. It is a text book . . . . a work of genius . . . . masterly in scope . . . . for everyone who wants to change from chemicals to organic fertilizer. Truly a book that you will value highly.

253 Pages
$3.50 Postpaid

ORDER THESE TWO EXCELLENT BOOKS FROM

ORGANIC GARDENING EMMAUS, PENNA.

Binders



IMPORTANT: When ordering, please state whether you want to use your binder for Organic Gardening Magazines or the Gardeners' Book Club books.

Especially Designed For Organic Gardening Magazine

Other Special-Size Binders Available for The Gardeners' Book Club

Protects and securely holds your prized copies. These convenient, ready-reference binders are covered attractively with sturdy, black cloth, the title stamped in gold. Will add a rich appearance to any setting. Complete as shown with 12 flexible, retaining wires for quick and easy insertion.

HOLDS 12 ISSUES

$2.00 POSTPAID

Binders intended for use with Organic Gardening Magazine are not suitable for use with the Gardeners' Book Club or vice versa.

Order direct from

ORGANIC GARDENING, Emmaus, Pa.

Pay Dirt Will

open your eyes to the dangers of chemical fertilizers . . . . will convince you that gardening and farming with compost insures the successful growing of flowers, fruits, vegetables and farm crops that are really healthy.

by J. I. Rodale - Editor of Organic Gardening

PAY DIRT is a clothbound, big-size book that will appeal to you whether you are the owner of a 500 acre farm, or the proprietor of a truck garden, or the tiller of a small patch, or even if you confine your plant raising activities to a window box.

PAY DIRT is a practical and useful guide with simple rules for avoiding the highly-propagandized chemical fertilizers. It will teach you how organic fertilizer . . . . made in your own backyard from animal and vegetable waste products . . . . can give you truly nutritious foods, that are rich in all the elements . . . . the vitamins and minerals . . . . that build healthy bodies.

PAY DIRT is inspiring, stimulating reading that makes a sound, common sense approach to the value of composts for restoring the soil's fertility.

PAY DIRT is one book that it will pay you to read and study.

PAY DIRT . . . . order direct from ORGANIC GARDENING • EMMAUS, PENNSYLVANIA

$3.00 POSTPAID

O I 49 2YR EE131
MRS JAMES INGLIS
2301 HIGHLAND ROAD
ANN ARBOR MICH

Contents

PART ONE—The Living Soil

The Biologic Life of the Soil
The Earthworm
The Mycorrhiza Fungi
The Penicillium Mold

PART TWO—Compost Theory and Practice

Sir Albert Howard — Father of Scientific Composting
How to Make a Compost Heap
The Compost Process
Lime, Wood Ash and Rocks
Spreading Compost
Compost Heaps for Small Gardens
Animal Manures
Short Cuts in Compost Making
Advantages of Compost Farming

PART THREE—The Dangers of Chemical Fertilizers

Are Chemical Fertilizers Necessary?
Chemical Fertilizers Are Too Strong
Condemned Farm Lands—Chemurgy
Weed Killers and Disinfectants
Chemical Vs. Biologic Concepts
You Have to Know Your Chemistry

PART FOUR—Health Or Disease From Food

Human Health and Composts —The Medical Testament
Is Our Health Related to the Soil?
Diseases of Farm Animals
Plant Disease and Insect Pests
Poison Sprays
Safe Means of Checking Insects and Disease in Gardens
Organic Orchards

PART FIVE—Good And Bad Farming Practices

Some Practices, Good and Bad
To Plow or Not to Plow
Burning over Land
Organic Vs. Artificial Poultry

With a Foreword by
Sir Albert Howard, C.I.E., M.A.